HYDROELECTRIC DEVELOPMENT AND LICENSING PROCEDURES

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY REGULATION

AND THE

SUBCOMMITTEE ON WATER AND POWER

OF THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

FIRST SESSION

TO EXPLORE WAYS IN WHICH THE FEDERAL LICENSING PROCESS CAN BE ACCELERATED IN A MANNER CONSISTENT WITH THE PUBLIC INTEREST

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HYDROELECTRIC DEVELOPMENT AND LICENSING PROCEDURES

MONDAY, OCTOBER 19, 1981

U.S. SENATE,
SUBCOMMITTEE ON ENERGY REGULATION
AND THE SUBCOMMITTEE ON WATER AND POWER,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The subcommittees met, pursuant to notice, at 10 a.m., in room 3110, Dirksen Office Building, Hon. Gordon J. Humphrey, presiding.

Present: Senators Humphrey, Murkowski, and Jackson.

Also present: Howard Useem and Russel R. Brown, professional staff members.

OPENING STATEMENT OF HON. GORDON J. HUMPHREY, A U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator HUMPHREY. Good morning. Today the Subcommittees on Energy Regulation and Water and Power will be conducting the first of 2 days of oversight hearings on the subject of hydroelectric development and licensing procedures.

The purpose of these hearings is to explore ways in which the Federal licensing process can be accelerated in a manner consistent with the public interest. I am sure that each of you testifying here today will be able to contribute some practical insights as to how this might best be accomplished.

As all of us are aware, hydroelectric power has reemerged as a viable and exciting source for helping meet America's future energy needs.

The Arab oil embargo of 1973 and the Iranian Revolution of 1979 have shown just how vulnerable this country is to the rising cost and uncertain supply of foreign oil. Last week the tragic assassination of Egyptian President Anwar Sadat has served as a painful reminder of the continued potential for disruption in the Middle East, and now more than ever, it is imperative that our country make a concerted effort to diversify its energy mix, make fuller use of its indigenous resources, and continue the practice of energy conservation.

I am confident that hydroelectric power can make a significant contribution toward America's energy independence. I am proud to say that my home State of New Hampshire has played a leading role in this effort. New Hampshire was the first State in the Nation to implement section 210 of the Public Utility Regulatory Policies Act which guarantees favorable buy-back rates for small power producers. We have also pioneered in New Hampshire in the creation of a State leasing program for the redevelopment of State-owned dams. All told, there are over 50 preliminary permits and license applications now on file at the Federal Energy Regulatory Commission from New Hampshire, and if economies could be achieved through a streamlining of the licensing process, even more sites would become feasible in my State as well as others.

Both Senator Murkowski and I have held field hearings in our respective States, and as I believe we can both attest, there is no clear consensus at least yet on how the Federal licensing role can be improved.

This is not a legislative hearing on the administration's bill, S. 1299, and we urge you to assess the entire range of streamlining possibilities.

It is with great interest that we will receive testimony this morning from several panels of experts. I would like to thank each of you in advance for taking the time and effort to share your views with us. You are encouraged to summarize freely in your oral testimony, and I assure each witness that written statements will be included in full in the record and read and scrutinized and studied by members of the staff, if not by members of the subcommittees themselves.

We are here today to listen to you and find out what problems you are having with the existing system and what suggestions you have for improvements.

I will place in the record at this point a statement from Senator Wallop.

[The prepared statement of Senator Wallop follows:]

Statement of Senator Malcolm Wallop
before the Subcommittee on Water and Power
on FERC Licensing Procedures

Mr. Chairman. Periodic shortages in fossil fuels plus increased fuel costs dictate that we examine alternative supplies of energy. One source of energy whose potential benefits have not been fully maximized is hydroelectic power generation. Hydropower is convenient, efficient and less environmentally objectionable than other types of power generation, especially when developed at existing water resources development facilities.

Studies indicated that hydropower potential could save the country hundreds of thousands of barrels of oil per day. The Bureau of Reclamation in its 1980 Assessment of Small Hydropower Development states that 109 million kilowatts of undeveloped hydropower potential exists nationwide. One half of that potential is located within the seventeen western states.

The federal government should be encouraging the private development of hydropower; however, inconsistent policies and delays in licensing have hampered its growth. I commend Senators Murkowski and Humphrey for focusing on the hydroelectric licensing procedure and I encourage the committee to find a means of simplifying and clarifying the process.

I would like to draw attention, however, to one particular issue which is of primary importance to the hydropower development in the State of Wyoming. The Bureau of Reclamation has constructed irrigation facilities throughout the West in an effort to provide a dependable source of water for agriculture. In recent years, hydropower has been identified as a secondary benefit of many of these existing facilities. While the Bureau has expressed its desire to encourage the present operators of those facilities to develop the existing hydro potential, certain policies have been enforced which negate the economic feasibility of these projects. The Department of the Interior has insisted on implementing a charge for the lease of power privileges on all non-federal development including development by the original project beneficiaries. This annual charge could be as high as 50% of the net revenues.

This blanket policy ignores the fact that many of the operators have contracts with the Bureau of Reclamation which convey the facilities to the operator upon repayment. In addition, project operators intend to reinvest revenue from the hydropower in the original project for such things as rehabilitation of canal structures. Irrigation districts who pay the system costs should not be placed in the same category as non-contributing entities whose only connection with the project is their desire to develop the power.

I would like to share the frustration experienced by the Shoshone-Heart Mountain Irrigation District regarding the Department of the Interior's policy by placing in the hearing record a history of their small hydro project in northwestern Wyoming. This problem was very appropriately analogized by the Shoshone-Heart Mountain District Manager when he stated to me that it was similar to having an implement dealer sell a tractor to you on credit for pulling a haybaler and then having him come back to you after it has been paid for and having him tell you to pay extra whenever you use it to dig beets.

I recommend that the committee seriously review this policy in an effort to eliminate the inequity created. Our policies should be to encourage hydro development by owner-operators of existing water resource facilities not policies of discouragement.

STATEMENT OF SHOSHONE IRRIGATION DISTRICT before the Subcommittee on Water and Power on FERC Licensing Procedures

The Shoshone Irrigation District (SID) was aware of the "falling water charge" shortly after deciding to proceed with funding under Public Law 84-984, Small Reclamation Projects Act (PL-984). SID felt that because it had paid out its construction contract to the United States, the falling water charge would be waived. The initial 20 percent of net revenues which was suggested on March 23, 1979 was felt to be excessive, but we felt we could live with what might be decided through negotiations at the local level as proposed in the May 22, 1980 correspondence. We proceeded on this basis to acquire permits, a demonstration project grant and to negotiate other aspects of the repayment contract. On September 10, 1980 we received the revised repayment contract in which the local Bureau of Reclamation people were directed by the Deputy Assistant Secretary of the Interior, Daniel Beard, to include a 50 percent of net revenue falling water charge. There were to be no negotiations at the local level. On this basis, the Board of Commissioners of SID rejected the repayment contract.

During June 1980, SID, being eligible, had applied for an exemption from licensing by the Federal Energy Regulatory Commission (FERC) because were we to receive our funding October 1, 1980 we could go directly to construction. With the rejection of the repayment contract, SID reassessed its position and decided to re-establish our Application for License to FERC because in our opinion the Federal Power Act gives FERC the right to set the annual charges for the use of federal facilities in the hydroelectric projects.

On September 30, 1981, SID signed the repayment contract with the 50 percent of net revenue falling water charge included because the anticipated interest rate increase for the new fiscal year would have made the project infeasible. On October 9, 1981, SID was issued a License to Construct by FERC in which the project was exempted from any annual charge.

Beyond the question of who has the right to assess the annual charges on hydroelectric projects constructed by Federal monies, there are two other points in the PL-984 project which should be addressed. First, the contract designates what SID must do with their portion of the net revenues. We must develop a capital improvement fund to replace and improve irrigation facilities within the District. These facilities are held in fee title by the United States. Thus the use of the revenues by the District will mean less dependence on the United States for funds to improve the irrigation system. Second, the revenues received by the United States from the falling water charge will be credited on the end of our current R&B loan, then the funds will accrue to the General Treasury of the United States. This is in direct conflict with our construction contract which states that the funds are to be returned to the District and be used as the District may direct.

Beyond feeling that the negotiations were not in good faith on behalf of the United States, the delay has been costly.

For instance the increase in interest payable went from 7¼ to 8 5/8 percent. This changes our annual payments from $180,000 (first year) and $235,000 (for subsequent years) to $206,000 and $273,000 respectively. Over the expected life of our repayment contract of forty (40) years this requires an additional payment of approximately $1,496,000. Added to this is the escalation due to inflation caused by a year's delay which amounts, up front, to approximately $325,000.

Had the United States negotiated in good faith to resolve this issue as expeditiously as possible it would not have been necessary for the District to redirect its effort in obtaining a FERC license which again cost an additional $20,000. Thus over the life of the project and repayment period, the delays encountered will cost the District approximately $1,841,300. This inconsistency and lack of equitable policies by the United States is indicative of waste in many areas that is causing the American public to lose faith in its government.

See exhibits "A" and "B" for chronological statements of correspondence and events and Contract excerpts.

It is sincerely hoped that the data provided herein can help curtail some of these problems.

EXHIBIT "A"

FALLING WATER CHARGE

Chronological Listing of Correspondence

January 23, 1979 - Letter to Mr. Lloyd - questioning the validity of charge as it was being related to our project. Asking for determination.

February 19, 1979 - Joel Busch attended Annual meeting to discuss PL-984 funding.

March 23, 1979 - Letter from Joe Marcotte - Power marketed to preference customers and appropriate charge for leasing the facility in accordance to the Reclamation Act of 1939. Annual charge could vary from 10 to 50 percent of the net power revenues. Suggested 20 percent to be applied to the repayment obligations of the Shoshone Irrigation District and possibly Deaver Irrigation District would be appropriate. Recommendation to be forwarded to Interior for lease charge to be established by Secretary of Interior.

August 20, 1979 - Draft loan application report under PL-984 submitted for review.

November 23, 1979 - Received comments on draft PL-984 report. Final application to be changed as lease charge policy is developed.

November 26, 1979 - Letter from Joe Marcotte - New Federal interest rate 7¼ percent to be used in final application report - PL-984.

January 21, 1980 - Letter from L. W. Lloyd acknowledge receipt of final application report - PL-984.

April 1, 1980 - Final application report to Commissioner of Reclamation for Interior and Congressional approval.

May 2, 1980 - Letter from D. S. Lauver - Intent to begin negotiations of a contract for repayment of a loan - PL-984. Final loan application still under review in the Commissioner's office awaiting repayment plan and the "falling water charge" issue to be resolved.

May 22, 1980 - Letter from D. S. Lauver - PL-984 loan approved by Commissioner of WPRS and the Secretary of Interior. Forwarded to Congress for approval. Requirement that the annual charge for lease of power privileges (falling water charge) be negotiated at the time of repayment contract negotiations. This refers to a letter from R. Keith Higginson, Commissioner approved by Deputy Assistant Secretary, Daniel P. Beard for Secretary of Interior dated May 14, 1980.

June 20, 1980 - Letter from D. S. Lauver - Enclosed draft contract. Falling water charge not yet resolved. Strive to have negotiation on the contract completed by early August so Washington office will have 6 weeks for review. Goal is to have a contract executed prior to September 30, 1980.

September 10, 1980 - Letter from Joe Marcotte - Revised draft contract language covering falling water charge and capital improvement fund. Were directed to include the 50 percent of net revenue as a falling water charge for project utilizing federally owned facilities such as the Garland Canal Power Project. Also included a procedure to amend the contract should the policy be revised to something less than 50 percent or to waive the charge should the policy so be modified.

January 26, 1981 - Letter from Jerome M. Schaack - Charge for power privileges of 50 percent of the net power revenues was concurred in by the Secretary of Interior on December 19, 1980.

April 21, 1981 - Letter from Aldon D. Nielsen - Response of our letter to President Reagan dated November 6, 1980. Only wish to protect the interests of the United States by assuring that the safety and operational aspects of the existing project are not impaired and that the United States is compensated through a power privilege charge for the use of its facilities.

Since Federal funds were used to construct facilities on the Shoshone Irrigation Project, any profit made through the use of these facilities should be shared with the United States. Administration realized that the irrigation district has repaid a substantial amount of project construction costs, but, there are other costs that have been forgiven including substantial interest expenses. Sharing the profits from power development would help repay these other expenses incurred by the United States.

The power privilege charge is presently under review by the Department of the Interior and some modifications may be forthcoming. Interior will inform you of any revisions.

July 31, 1981 - Letter from D. S. Lauver - Draft contract - PL-984. The interest rate changes reflect the fiscal year 1981 rate of 8.625 percent. This draft includes the falling water charge language that was rejected by the Board of Commissioners in September 1980. The falling water charge policy is being reviewed, there have not been any changes as of this date.

August 18, 1981 - Letter from Dean House - The "Draft Contract" has been reviewed by the Shoshone Irrigation District Board of Commissioners and we are willing to sign the contract in its present form. However, the issue of the "Falling Water Charge" has not been resolved to our satisfaction and we will continue to pursue getting this resolved with more favorable consideration to the District.

September 30, 1981 - PL-984 Repayment Contract approved under protest of the falling water charge by the Board of Commissioners of the Shoshone Irrigation District.

EXHIBIT "B"

LICENSING

Chronological Listing of Licensing Events

August, 1979 -	Application for Preliminary Permit for Garland Canal Power Project. Prepared because it was required in order to be considered for grant funding as a demonstration project under PON II DE-PN-07-ID-12043 for the Department of Energy.
January, 1980 -	Submitted License to Authorize the Construction of Garland Canal Power Project. Processing of the preliminary permit application was never finalized. Also requested an exemption under the terms of Docket No. RM 79-35, "Exemptions of Small Conduit Hydroelectric Facilities from Part 1 of the Federal Power Act."
June, 1980 -	Withdrew Application for License and had the same data considered as an application for a small conduit exemption. Also requested an exemption from provisions of Section 10 (e) of the Federal Power Act which impose annual charges for the use and enjoyment of United States' property.
October, 1980 -	Requested application for a small conduit exemption be set aside and the original application for license be re-established. The District formally requested that it be exempted pursuant to Section 30 of the Federal Power Act, 16 U.S.C. 823a, from annual charges that may be imposed under a license. The request to re-establish was made because of the continued assertion of the Department of Interior that it has the authority to assess a falling water charge.
Oct. 15, 1980 -	Exemption from licensing granted.

March 18, 1981 - Re-establishment of application for license was granted.

October 9, 1981 - Order Issuing License (Major). The District was exempted from annual charges under Section 10(e).

TERMINATION OF CONTRACT

12. This contract shall terminate when full repayment as provided herein has been made to the United States.

FALLING WATER CHARGE

13. a. The Garland Canal is a feature of the Shoshone Project which was developed with Federal funds under provisions of Federal Reclamation Laws and the ownership of the physical features of the Shoshone Project such as Garland Canal remain with the United States. The Contractor agrees that benefits accruing as a result of Garland Canal Power Project are dependent on these facilities owned by the United States and that a charge for use of the power site herein called the falling water charge is applicable. For the purposes of this contract, the falling water charge shall be 50 percent of the annual profit margin derived by the Contractor in its operation of the Garland Canal Power Project. Such profit margin shall be the annual amount remaining after the Contractor's gross power revenue has been adjusted by the annual costs of operation, maintenance, and replacement and its repayment obligations as set forth in this contract and described in the Contractor's loan proposal as approved by the Secretary and other loan obligations the Contractor may incur to complete the project. Such falling water charge shall be determined annually and payable on March 1 of each year based on the revenue and the costs of the Contractor for the preceding year: Provided, That the first payment shall be due on March 1 of the second year following notification of project completion. Following termination of this contract as provided in Article 12, the Contractor agrees to renegotiate a separate contract covering continuation of the falling water charge if policies of the United States then require continuation of such charge.

b. Revenues paid to the United States by the Contractor for the falling water charge provided under this contract article shall be placed into the Reclamation Fund and credited as a payment on the end of the obligations of the Contractor for the existing Rehabilitation and Betterment (R&B) loan under Contract No. 14-06-600-10104, as amended, and such other R&B loans as may be entered into, until such R&B loan obligations are fully repaid. Thereafter, these revenues shall accrue to the General Treasury of the United States. It is understood by the Contractor that the effect of this provision may be to reduce the length of the repayment period under Contract No. 14-06-600-10104 and that no reduction in the annual payments required under said contract is either intended or implied.

c. Should the policy of the United States governing falling water charges be modified to the advantage of the Contractor, the United States agrees to amend this contract to the extent of such modification or waive the falling water charge should such a waiver be in accordance with the modified policy.

RESERVE FUND

14. Commencing with the first year the project is in operation by the Contractor and continuing until such time as all sums of money becoming due hereunder shall have been paid to the United States, the Contractor shall accumulate and maintain a reserve fund of $45,000 which will be available for use in the manner, for the purposes, and in the circumstances hereinafter set forth. Such reserve fund shall consist of annual deposits by the Contractor of not less than $6,400 to a special reserve fund account established by the Contractor. Such annual deposits shall continue until the amount in the reserve fund is not less than $45,000. Expenditures shall be made from such reserve fund only for meeting major unforeseen extraordinary costs of O&M, repair, betterment, and replacement of project works and for O&M during periods of special stress such as may be caused by drought, hurricane storms, or other like emergencies. Whenever said reserve fund is reduced below $45,000 by expenditures therefrom, it shall be restored by accumulation of annual deposits of $6,400 or a lesser amount if such lesser amount will restore the fund to $45,000 commencing with the next year following that in which the fund is reduced below said amount. During any period in which any of the project works may be operated by the United States, such fund shall be available for like use by the United States. At the option of the Contractor, the reserve fund may be invested to the extent permitted by law: Provided, That such reserve fund may be made available within a reasonable time to meet expenses for the purpose for which it was accumulated.

Upon mutual agreement of the parties hereto, said fund and annual installments may be adjusted to reflect the addition, deletion, or changes in project facilities and O&M costs not contemplated when this contract was executed.

CAPITAL IMPROVEMENT FUND

15. For the purposes of this contract and specific project, all revenues received from operation of the project by the Contractor not required to meet its financial obligations under this contract or otherwise directly associated with the project, shall be deposited into a Capital Improvement Fund. Expenditures from such fund shall be made only to replace or improve irrigation facilities of the Garland and Frannie Divisions of Shoshone Project.

NOTICES

16. Any notice, demand, or request authorized or required by this contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Regional Director, Upper Missouri Region, Bureau of Reclamation, P.O. Box 2553, Billings, Montana 59103, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Shoshone Irrigation District, 337 East 1st, Powell, Wyoming 82435. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this article for other notices.

Profits Under Subsections I and J of the Act of December 5, 1924.

31. Should any net profits be realized by the United States from any of the various sources named in subsections I and J of said Act of Congress of December 5, 1924, the same will be announced and determined each year by the Secretary in a written statement to be sent to the District. The portion of such net profit, if any, as determined by the Secretary, shall be credited each year as follows:

(a) On the annual installment of project construction charges (including the construction charges payable by non-consenting application landowners) of the District beginning with the installment first coming due and continuing with succeeding construction installments as far as such credit will go until the entire construction indebtedness of the District has been paid;

(b) Thereafter upon operation and maintenance charges (including operation and maintenance charges on non-consenting application land) as the same comes due to the United States;

(c) As the District may direct;

but no distribution to individual water users shall be made out of any such profits until all obligations to the United States have been fully paid. The Secretary shall determine the proportion of net profits, if any, under said subsections I and J and from other sources equitably to be credited to the District, as well as the amount of such net profit.

Senator HUMPHREY. Let me call the first panel of witnesses, please—Mr. Thomas Frey, general counsel, New York State Power Authority; Mr. Tim Weston, associate deputy secretary for resources management, Pennsylvania Department of Environmental Resources; and Gary Magnuson, assistant director for water resources, Office of California Gov. Edmund G. Brown, Jr.; and Henry J. Ellis, vice president, engineering, Public Service Co. of New Hampshire, representing the Edison Electric Institute; Mr. Morgan Dubrow, senior staff engineer, Natural Rural Electric Cooperative Association; and Mr. William Matson, executive vice president and general manager of the Pennsylvania Rural Electric Association.

Why don't we go from my left to right and I again emphasize the need to summarize your written statements. Full statements will be included in the record.

Mr. Ellis, would you begin?

STATEMENT OF HENRY J. ELLIS, VICE PRESIDENT, PUBLIC SERVICE CO. OF NEW HAMPSHIRE, ON BEHALF OF THE EDISON ELECTRIC INSTITUTE

Mr. ELLIS. Mr. Chairman, members of the subcommittee, my name is Henry J. Ellis, vice president of Public Service Co. of New Hampshire. I appreciate the opportunity to come before you today representing the Edison Electric Institute to discuss hydroelectric power issues.

EEI is an association of America's investor-owned electric utility companies. The member companies of EEI serve 99 percent of all customers of the investor-owned segment of the industry, and 77½ percent of all the users of electricity in the United States.

We applaud the stated objectives of these hearings to streamlining the regulatory process and to help promote the development of hydroelectric power. In the interest of saving time, I will briefly summarize our prepared testimony which I understand you already received.

Our comments cover two general areas. The first involves the permit and licensing process for non-Federal hydro projects and the resulting regulatory burden.

The second area relates to what in our view are the artificial market stimulus resulting from recent congressional initiatives in the hydro area.

With respect to the area of licensing, a non-Federal developer who wishes to construct a hydroelectric power project must obtain either a license or an exemption from licensing from the Federal Energy Regulatory Commission. The Federal Power Act is the central statutory framework which establishes the licensing process for such projects. Under the act, the developers generally apply for preliminary permits which if granted by the Commission vests in the applicant the exclusive right to study a particular site for up to 3 years, and grants the applicant a preferred position when seeking a license to construct on this site.

In 1980, the Commission received more than 500 applications for preliminary permits. That was 7 times the number filed in 1979, and almost 15 times the number of applications filed in 1978. Earlier in the year, the Commission estimated it would receive more than 1,500 preliminary permit applications by the end of the year, and that as of August 31 of this year, the Commission had already received 1,316 such applications.

In the face of such increased workload, we recognize and applaud recent steps taken by the Commission to expedite the permit and licensing process. However, we also recognize, as does the Commission itself, that additional changes are necessary to further reduce the Commission's workload.

The investor-owned electric utility industry generally endorses the objectives of Senate bill 1299. When hearings are held on the bill we will testify in support of its enactment and suggest simple but important amendments so that the purposes of the legislation may be fully achieved.

We understand, however, that there are those who oppose S. 1299 unless it is amended to provide specifically that the Commission may not waive section 7, the preference provision of the Federal Power Act. Preference is a subject that needs reviewing and reconsideration in all of its manifestations, and we would welcome hearings on that issue at some future date. While the preference position may have been appropriate in 1920, we do not feel it is today.

As a result, the Edison Electric Institute will oppose S. 1299 if it is modified to include a specific preference clause.

Another area which deserves the close attention of this committee is the lengthy processing time presently required by the Commission to issue licenses to project developers. Currently more than 20 Federal statutes in addition to the Federal Power Act potentially affect the licensing of non-Federal hydroelectric projects. Under these statutes, numerous Federal agencies in addition to the Commission have asserted authority over the licensing of hydroelectric power projects. Congress must make the tough choices necessary to eliminate the fragmented jurisdictional claims asserted by Federal agencies as a result of piecemeal legislative enactments over the years.

EEI believes that the most viable solution to the present morass of jurisdictional claims by Federal agencies is to enact legislation which would establish the Commission as the undisputed lead agency in hydroelectric licensing.

Turning from the licensing process to another area which deserves the close attention of the committee, an inequity currently exists in the Federal law with respect to headwater benefits bestowed on Federal projects by upstream non-Federal installations. An accepted principle in river development is that upstream storage increases the energy capability of downstream projects, and that this headwater benefit is measurable in added monetary value to the owner of the downstream facility.

The Federal Government receives substantial sums of money from downstream owners of power facilities. However, no such reciprocal obligation is imposed on the Federal Government to pay for the benefits its projects may receive.

The Federal Power Commission in years past repeatedly recommended legislation to correct this inequity, but the Congress has never responded affirmatively to its recommendation.

The final portion of our testimony concerns a provision in Federal law which significantly dissipates the free market forces in the development of hydroelectric project. It involves the implementation by the Commission of title II of the Public Utility Regulatory Policies Act—PURPA.

EEI strongly recommends that Congress review the implementation of title II of PURPA to insure that implementation by the Commission and the States is consistent with the language and intent of the law. We offer the following four observations.

First, the Commission's implementation of title II of PURPA is contrary to the intent of law wherein Congress carefully balanced the interests of developers and utility customers, specified that rates not discriminate against the developer, be just and reasonable to consumers, and be in the public interest.

The Commission's implementation of PURPA rewards developers handsomely but ignores consumers' interests. An example demonstrating such a circumstance is contained in our filed testimony.

Second, utilities have a strong incentive to build small hydro facilities since their cost is generally less than the cost of building large projects which take many years to complete before they begin generating revenues.

Third, we feel that adequate incentives would be provided nonutility developers if the utilities were ordered to pay nonutility power producers a price that was set somewhere between the actual cost of jeopardizing that power and the utilities' full avoided cost.

Finally, this is not a conflict between utilities and developers but a situation where you must make the choice between assuring that consumers reap the benefits of low-cost hydropower or assuring windfall profits for a few developers.

Mr. Chairman, that concludes my summary of the prepared testimony, and I would be pleased to answer any questions.

[The prepared statement of Mr. Ellis follows:]

STATEMENT OF
HENRY J. ELLIS
VICE PRESIDENT, PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
ON BEHALF OF
EDISON ELECTRIC INSTITUTE
BEFORE THE
SUBCOMMITTEES ON ENERGY REGULATION AND WATER & POWER
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

October 19, 1981

Messrs. Chairmen and members of the Subcommittees, my name is Henry J. Ellis, Vice President of the Public Service Company of New Hampshire, and I appreciate the opportunity to appear before you today representing the Edison Electric Institute (EEI) to discuss hydroelectric power issues.

EEI is the association of America's investor-owned electric utility companies. The member companies of EEI serve 99 percent of all customers of the investor-owned segment of the industry and 77.5 percent of all users of electricity in the United States. Many of our members currently use hydroelectric power to meet their service obligation to their customers. As a result, we applaud the stated objectives of these hearings to streamline the regulatory process and to help promote the development of hydroelectric power.

To assure continuation of this process in a manner consistent with the public interest, the nation's investor-owned electric utility industry would like to address several areas relating to hydroelectric development and the licensing process through which this development occurs. These areas are:

A) 15 Mw. waiver legislation;

B) centralization of licensing responsibility in the Federal Energy Regulatory Commission;

C) headwater benefits; and

D) the "avoided cost" principles under PURPA.

Background

Since the 1973 oil embargo, increased attention has been focused on redirecting the nation's efforts towards reducing the amount of expensive imported oil used to meet our growing energy demands. The development of hydroelectric power plays, and will continue to play, an essential role in implementing this national policy, since our nation's water resources are a welcome renewable energy source which can provide significant amounts of electric power without consuming fossil fuels.

Our comments today will cover two general areas. The first involves the permit and licensing process for non-Federal hydro projects and the resulting regulatory burdens. The second area relates to what, in our view, are artificial market inequities resulting from congressional action or inaction in the hydro area.

A non-Federal developer who wishes to construct a hydroelectric power project must obtain either a license or an exemption from licensing from the Federal Energy Regulatory Commission (Commission). The Federal Power Act is the central statutory framework which establishes the licensing process for such projects. Under the Act, the developer generally applies for a preliminary permit which, if granted by the Commission, vests in the applicant the exclusive right to study a particular site for up to three years and grants the applicant a preference when seeking a license to construct on this site.

Under the current regulations, as between two or more competing applications for a preliminary permit at the same site (all other factors being equal), the Commission will give the permit to the first applicant who files. However, as between a municipal or state developer and a private developer, the governmental entity receives a statutory preference and consequently the right to study the site. When applying for a permit or license, the applicant need not possess a property interest in the proposed site. The Federal Power Act permits a developer who acquires a license to obtain the necessary property interests to develop a site through the federal power of eminent domain.

In 1980, the Commission received more than 500 applications for preliminary permits--seven times the number filed in 1979 and almost 15 times the number of applications filed in 1978. In early 1981, the Commission estimated it would receive more than 1,500 preliminary permit applications by the end of this year, and as of August 31, the Commission had already received 1,316 such applications during 1981.

The Commission which is faced with this increasing workload is presently understaffed to handle such increases. As of September 1, 1981, more than 1,500 preliminary permit applications were pending. Of course, a substantial number of such preliminary permits will become license applications to develop new hydroelectric generating capacity, and these will only add to the increasing number of pending license applications.

In the face of such increased workloads, we recognize and applaud recent steps taken by the Commission to expedite the permit and licensing process. Among such actions taken in the past two years are short-form license procedures; simplified preliminary permit application requirements; simplified regulations for major projects--existing dams; procedural improvements for processing preliminary permits; simplified filing requirements; and exemption of small hydroelectric power projects of 5 Mw. or less and conduit facilities of 15 Mw. or less from licensing requirements. However, we also recognize, as does the Commission itself, that additional changes are necessary to further reduce the Commission's workload so as to fully utilize our hydroelectric resources as quickly as possible.

Waiver of the Provisions of Part I of the FPA for Projects of 15 Mw or Less

Except for the exemptions available to projects at existing dams of less than 5 Mw, and 15 Mw exemptions for manmade conduits and the waiver authority for projects of 1.5 Mw or less, the permit and licensing requirements of the Federal Power Act currently apply to all proposed hydroelectric projects, even though the environmental concerns and other associated impacts for many of these small projects will be less than those of larger projects. As a result, we believe the Commission should be able to waive any of the permit or license requirements for appropriately-sized hydroelectric projects. This would expedite licensing of smaller projects, thus reducing the Commission's current work load and allowing the Commission to direct its efforts and expertise to larger projects.

As you know, legislation of this kind is presently pending before Congress. S. 1299 would amend the Federal Power Act to grant the Federal Energy Regulatory Commission the authority to waive any provision of Part I of the Act "in connection with an application for, or amendment or notice of, a permit, license, or exemption for an existing or proposed water project and appurtenant project works." The Commission could exercise this waiver authority only on projects with total installed capacity of 15 megawatts or less. Such waivers would be subject to any terms and conditions the Commission considers appropriate.

The investor-owned electric utility industry generally endorses the objectives of S. 1299. When hearings are held on S. 1299, we will testify in support of its enactment and suggest simple but important amendments so that the purposes of the legislation may be fully achieved.

We understand, however, that there are those who oppose S. 1299 unless it is amended to provide specifically that the Commission may not waive Section 7, the preference provision of the Federal Power Act. Preference is a subject that needs review and reconsideration in all of its manifestations, and we would welcome hearings on that issue at some future date. While we recognize that the municipal preference provision has a 60-year legacy, it is our conviction that the clause was tailored to fit factual circumstances and needs in 1920 that may be anachronistic when examined in light of 1981 realities. As a result, the Edison Electric Institute will oppose S. 1299 if it is modified to include a specific preference clause.

It is also our understanding that Congress has established the development of available desirable small hydro sites as an integral part of our energy policy, and that the purpose of S. 1299 is to hasten that development, process applications quickly and give the green light to whatever responsible party is willing and able to develop a site expeditiously. We do not believe that the preference question, highly controversial as it may become, should be allowed to delay either the legislation of the desired hydro development.

"One-Stop" Licensing Authority

Another area which deserves the close attention of this Committee is the lengthy processing time presently required by the Commission to issue licenses to project developers. Commissioner Sheldon indicated during her testimony before the House Appropriations Committee in March of this year that mandatory coordination with other agencies was partly responsible for the lengthy processing period. Currently, more than twenty federal statutes in addition to the Federal Power Act potentially affect the licensing of non-Federal hydroelectric projects. Under these statutes, numerous federal agencies in addition to the Commission have asserted authority over the licensing of hydroelectric power projects (e.g., Fish and Wildlife Service, Bureau of Land Management, Army Corps of Engineers), which has resulted in overlapping and conflicting claims to licensing responsibility. (It should be noted that relicensing existing projects has also been a problem. However, pending litigation makes inappropriate any further comment on this issue today.)

As I am sure the Committee is aware, delays in issuing licenses have significant financial implications for the developers and, ultimately, the ratepayers. In addition, the delayed generation of power from a renewable resource requires continued generation from other nonrenewable fuel sources such as oil or gas. As developers of numerous hydroelectric projects, the electric utility industry can assure you that serious disagreements between federal agencies and the Commission can result in unexpected expenditures of valuable time and money. Some examples might help to illustrate this point.

In June, 1970, a member company and two affiliated utilities filed an application with the Commission's predecessor (the Federal Power Commission) for a license to construct and operate a 1,000 megawatt pumped storage hydroelectric project. In preparing the application, the company consulted (as required by FPC regulations) extensively with other federal agencies, including the Army Corps of Engineers. Over the ensuing two-year period, the FPC's staff circulated the application to numerous federal and state agencies for comment, again including the Corps of Engineers. The FPC's staff in 1973 circulated for comment a draft environmental impact statement. The Corps was specifically asked to comment.

The FPC set the proposal for evidentiary hearings, which lasted for approximately nine months and ultimately concluded with a record in excess of 20,000 pages. Among the intervenors in the hotly-contested proceeding were the Department of the Interior, the State affected, and the Sierra Club. Although the Corps of Engineers had every opportunity to appear at hearings and present testimony and evidence to support its position, it did not. Indeed, in every letter of comment submitted to the FPC regarding the project, the Corps did not indicate any opposition.

Additional proceedings, including briefs to the administrative law judge, an initial decision, exceptions to the initial decision, and plenary consideration by the Commissioners, consumed three additional years. In 1977, the FPC issued an opinion and order that, after exhaustive consideration of all relevant environmental and other issues, including alternatives, granted a license to construct and operate the Davis Project. The FPC subsequently denied rehearing of its order, and certain parties appealed.

Over a year after the FPC issued the project license, the District Engineer for the U.S. Army Corps of Engineers, in one of his last official acts before retirement, denied the utilities' application for a dredge and fill permit under section 404 of the Federal Water Pollution Control Act Amendments. The dredge and fill activities were to be incidental to the more significant construction associated with the project. The District Engineer's decision was not based on the effects of the dredging and filling; instead, he decided that the utilities should not construct the project, but rather an alternative that had already been fully considered--and rejected--by the FPC. The denial of the section 404 permit was the first indication in nine years that the Corps had any objection to the proposed project.

Today, eleven years after the application was filed, the project is in a limbo of judicial suits, countersuits, appeals and cross-appeals. The confusion and delay associated with this much-needed energy source can be traced directly to the conflicting decisions of two federal agencies on identical issues.

Even when the complicated consultation process does not preclude development, it is nevertheless a time consuming and burdensome process. As another member company indicated, even in relatively uncomplicated matters, the process required sending more than 50 copies of applications to more than twenty different addressees, some of which are divisions within the same staff or federal agency. Attached for your information is a list of the applications submitted in this instance.

Such duplication and overlap show clearly that now is the time for the Congress to conduct a comprehensive review of the hydroelectric project licensing process. Congress must make the tough choices necessary to eliminate the fragmented jurisdictional claims asserted by Federal agencies as a result of piecemeal legislative enactments over the years. EEI believes that the most viable solution to the present morass of jurisdictional claims by federal agencies is to enact legislation which would establish the Commission as the undisputed "lead" agency in hydroelectric licensing. Such legislation should restrict federal agency participation in the hydro licensing process to submitting comments to the Commission within time limits. It should also prohibit any other federal agency from issuing any separate or independent approval for any hydroelectric project within the jurisdiction of the Commission. Draft legislation of this type has already been submitted by Commissioner Sheldon to Rep. Bevill. Such legislation, if enacted, would go a long way to accomplish the end suggested above.

We do not, it should be noted, ask to be relieved of any existing requirements of law. We simply ask that the waste and confusion caused by the current scheme of overlapping and conflicting federal agency authorities be eliminated by placing exclusive decision-making jurisdiction in one agency. Only then will a measure of certainty and regularity prevail in federal regulation of hydroelectric projects.

Headwater Benefits

Turning from the licensing process to another area which deserves the close attention of this Committee, an inequity currently exists in federal law with respect to headwater benefits bestowed on federal projects by upstream non-federal installations. An accepted principle in river development is that upstream storage increases the energy capability of downstream projects and that this headwater benefit is measurable in added monetary value to the owner of the downstream facility.

Section 10(f) of the Federal Power Act recognizes this principle and provides that, when licensees are benefitted by reservoirs or other headwater improvements constructed by other parties, including the United States, they shall reimburse the owner of such improvements for such part of the annual charges for interest, maintenance and depreciation as the Federal Energy

Regulatory Commission deems equitable. These annual charges are set by the Commission usually for a five-year period after opportunity for hearings.

The federal government receives substantial sums of money from the downstream owners of power facilities. For example, a primary justification for the construction of the giant Libby Dam, a federal installation on the Kootenai River in northwestern Montana, was the headwater benefits to be realized by the many downstream installations in the Columbia River. Non-federal projects downstream pay the Federal government for these benefits.

However, no such reciprocal obligation is imposed on the Federal government to pay for the benefits its projects may receive from upstream non-federal installations. For instance, Montana Power Company owns Kerr Dam on the Flathead River in the same general area of Montana. Many downstream installations including several federal projects receive headwater benefits from the Kerr Dam and all of them, except the federal projects, pay headwater benefits. In other words, the government demands payment for benefits conferred by its water projects but denies that it should reciprocate when it is the beneficiary.

The Federal Power Commission in years past repeatedly recommended legislation to correct this inequity, but the Congress has never responded affirmatively to its recommendation. This is apparently because of complaints by the preference customers receiving federal power that to do so would increase the cost of the federal facility and, therefore, the cost of the cheap power received by municipal electric systems, public utility districts, REA cooperatives, etc.

In the landmark Pacific Northwest Electric Power Planning and Conservation Act (PL 96-501), the Congress recognized two important principles: first, that the benefits of low-cost federal power should not be limited to the customers of public power systems but should go as well to the rural and residential customers of privately-owned utilities; and, second, that artificially low power rates are essentially anti-conservation.

In a similar vein, Congress should now correct the inequity that exists between those who use power from federal projects and the majority who receive it from other sources. At present, headwater benefits are a part of the cost, small but not insignificant, of the rates paid for power from all non-federal projects. Including that small cost in the rates paid by the customers of federal power is a small price to pay in the interest of maximum use and conservation of our water resources and simple equity between government and its citizens.

We append as a part of our testimony a copy of the proposal to accomplish this purpose submitted to Congress by the Federal Power Commission some years ago.

"Avoided" Costs Under Title II Of PURPA

The final portion of our testimony concerns a provision in federal law which significantly dissipates the free market forces in the development of hydroelectric projects. It involves the implementation by the Commission of Title II of the Public Utility Regulatory Policies Act (PURPA).

EEI strongly recommends that Congress review the implementation of Title II of the Public Utility Regulatory Policies Act to ensure that implementation by the Commission and the states is consistent with the language and intent of the law. Our concern is that the manner of implementing PURPA Title II, particularly as it relates to small hydro projects, may result in rates which are not "just and reasonable" to electric consumers and are thus contrary to the requirements of PURPA.

Titles II and IV of PURPA were designed to remove legal and institutional barriers to, and to otherwise encourage, the development of small hydro facilities by private developers. Title IV established a low interest loan program to encourage the construction of small hydroelectric systems. Title II requires utilities to interconnect with small hydro projects of private developers. It also requires that rates for transactions between private developers and electric utilities shall be just and reasonable, in the public interest, and shall not discriminate against private developers of small hydro facilities.

Despite those requirements of Title II, the Commission has required that utilities must pay full avoided cost for electricity generated by the private developers' small hydro facilities even where that results in rates that are not "just and reasonable." To explain more fully, full avoided cost is the full incremental cost a utility would bear if it generated the same increment of additional electricity from its own generating facilities or purchased it from another utility. Obviously, the factors which are considered in determining full avoided cost will vary depending on the circumstances of a particular utility and upon the other utilities or power pool to which it is connected. In the case of many utilities, however, full avoided cost or full incremental cost will be very high, because it is tied to the most expensive and least used facilities--oil or gas peaking units. As a result, in many cases the Commission's implementation of Title II of PURPA has had the perverse effect of artificially tying the price utilities--and thus their customers--will have to pay for cheaply produced hydropower to the price of the most costly service. That result clearly is not "just and reasonable" or "in the public interest."

Let me describe a specific example of the adverse effect the Commission's implementation of Title II will have on consumers in many cases. Puget Sound Power & Light Company in Washington State estimates that it can construct a small hydro facility at an initial investment of $1,500 per installed kilowatt of capacity. With Puget constructing the plant, the cost to ratepayers during the first year of operation is approximately 4 1/2 cents per KWH. Furthermore, since there is no fuel cost associated with hydropower, the price would drop in later years as initial capital costs were gradually recovered. Thus, Puget calculates that, by the tenth year, the power cost to its ratepayers would be about 3 1/2 cents per KWH.

But the results are dramatically different if someone else builds that same small hydro facility. In the manner in which the Commission and the states are implementing PURPA, if a private developer builds the facility, Puget's ratepayers would pay about 5 cents per KWH the first year for the same power, because it would be based upon Puget's full avoided cost. Assuming that full avoided cost increased at a conservative rate of 5%, in ten years Puget's ratepayers would be paying 8 cents per KWH. Thus, the end result is that Puget's customers will pay 8 cents per KWH for electricity if the small hydro project is built by a private developer, contrasted with 3 1/2 cents per KWH if Puget builds it--or 4 1/2 cents more than necessary for each KWH so that private developers can reap windfall profits far exceeding their actual cost of producing the electricity.

In concluding this section of our testimony, we offer the following four observations:

First, the Commission's implementation of Title II of PURPA is contrary to the intent of the law wherein Congress carefully balanced the interests of developers and utility customers, specified that rates not discriminate against the developer, be just and reasonable to consumers, and be in the public interest. The Commission's implementation of PURPA rewards developers handsomely but ignores consumers' interests.

Second, utilities have a strong incentive to build small hydro facilities, since their cost is generally less than the cost of building large projects which take many years to complete before they begin generating revenues. Adding to that incentive is the zero fuel cost of a hydro plant. Puget Power, for example, depends on hydropower for about 80% of its electricity sales now and is seeking Commission approval to build several new small hydro projects. In other words, one can seriously question whether any need exists at all for the federal government to provide special advantages or expensive subsidies to non-utility developers in order to assure development of hydro resources.

Third, even if Congress continues to believe it is necessary to provide special subsidies to encourage non-utility developers to build small hydro projects, it certainly is not necessary to guarantee those developers windfall profits that greatly exceed their costs. For example, Congress could urge the Commission to revise its current regulations and order utilities to pay non-utility hydropower producers a price set somewhere between the actual cost of generating that power and the utility's full avoided cost. In that way, non-utility developers would be assured of recovering their costs plus a reasonable profit while consumers would be guaranteed at least some of the price benefits of inexpensively produced hydro power.

Fourth, and finally, we anticipate that developers who have an economic interest in perpetuating the present regulations will seek to cloud the issue by characterizing this as a disagreement between small, innovative business on the one hand and large, archaic utilities on the other. We do not believe that is the situation. The choice Congress will be making will not really be between utilities and developers. The choice you must make is between assuring that consumers reap the benefits of low-cost hydropower or assuring windfall profits for a few developers.

Messrs. Chairmen, this concludes my prepared statement. I would be pleased to answer any questions you or the members of the Subcommittees might have.

LIST OF ADDRESSEES

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"Substitute Section"

That subsection (f) of Section 10 of the Federal Power Act (16 U.S.C., sec. 803 (f) is hereby repealed.

SEC. 2. That the following new section be added to the Federal Power Act:

"SEC. 31. (a) Whenever any hydroelectric power project owned by non-Federal interests is or will be benefited by the construction, operation, or maintenance of any reservoir or other water-use facility, the Commission, after notice to the owner or owners of any project so benefited, and after opportunity for hearing, shall determine and fix a reasonable and equitable annual charge to be paid to the owner of such facility furnishing such benefits, including the United States if it be the owner of the facility providing the benefit. The annual charges hereunder shall be such part of the fixed costs of the facility furnishing the benefit plus such part of the annual operating and maintenance costs of such facility, including land rentals and similar charges, as the Commission may deem equitable: Provided, That such annual charges shall not exceed the value of the benefits realized or received.

"(b) Whenever any hydroelectric power project owned by the United States is or will be benefited by the construction, operation, or maintenance of any reservoir or other water-use facility, the Commission, after notice to the Federal agency operating the project so benefited and the Federal agency or owner of the facility furnishing the benefit, and after opportunity for hearing, shall determine and fix a reasonable and equitable annual charge to be paid to the owner of such facility furnishing such benefits, such charge to be determined as provided in the preceding paragraph: Provided, That payments shall be required for benefits furnished by one Federal facility to another only if the cost of operating one of said facilities is payable from a revolving fund, and the cost of operating the other is payable from some other fund or direct appropriation: Provided further, That where no payment is required, the charges determined shall nevertheless be considered as an expense of the facility receiving the benefit and as accrued revenue of the other facility, with an appropriate equal adjustment in the repayable Government capital invested in each such facility.

"(c) Annual charges accessed hereunder may be readjusted by the Commission at periods of not less than five years after notice and opportunity for hearing or readjusted at any time by the Commission as changed conditions may warrant after notice and opportunity for hearing.

"(d) All charges collected for the benefits provided by any facility owned by the United States shall constitute revenues of the facility providing the benefit of such revenues shall be disposed of in accordance with any provisions of law applicable thereto.

"(e) All parties affected by any determination hereunder (except any agency of the United States in each instance where the cost of operating the facility involved is financed by direct appropriations) shall bear a reasonable share of the cost to the Commission of making the determination, and all such parties shall pay their share of such cost, as fixed by the Commission, into the Treasury of the United States for credit to miscellaneous receipts: Provided, That for those Federal facilities where payment into the Treasury is not required by this paragraph, the reasonable share of the cost as fixed by the Commission shall nevertheless be considered as an expense of the facility involved.

"(f) Appropriations or other funds available for operation of the facility concerned shall be available to pay the annual or other charges that may be assessed against the United States pursuant to the provisions of this section.

"(g) No party receiving a notice under subsections (a) or (b) of this section shall be required to pay annual charges under this section for benefits received prior to the enactment of this section or be required to pay annual charges under this section for benefits received more than five years prior to the date on which the Commission gives notice to such party as provided in subsections (a) and (b) hereof; nor shall any party receiving a notice under subsection (a) of this section be required to pay to any non-Federal interest annual charges under this section if it is paying or is required to pay similar annual charges under State law."

Senator HUMPHREY. Thank you, Mr. Ellis.

Mr. Matson, let me ask you to defer for a moment and we will go on to Mr. Weston and Mr. Magnuson since they are in a group that might be described as associated with utilities, and then we will come back to the rest of you.

STATEMENT OF R. TIMOTHY WESTON, ASSOCIATE DEPUTY SECRETARY FOR RESOURCES MANAGEMENT, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES

Mr. WESTON. Thank you, Mr. Chairman. I am Tim Weston, associate deputy secretary for the Pennsylvania Department of Environmental Resources, and I appreciate the opportunity to appear before the subcommittees today.

Let me give you some perspective on the department of environmental resources. We are at the same time a regulatory agency and an agency which has prime water management responsibility, including operation of a large number of structures.

The department of environmental resources has a 70-year history in the regulation of water resources, including the water supply and State water planning functions, water allocations, and the regulation of dams and encroachments. Each year we issue approximately 1,500 permits for new dams and encroachments in the State of Pennsylvania.

In addition, we are the State's lead hydrologic engineering organization. At this time, we operate and maintain 88 dams in the State of Pennsylvania as well as a number of smaller structures and a number of those facilities, including facilities that are as large as the Pymatuning Reservoir and the George B. Stevenson Reservoir, have a good potential for hydroelectric development.

The Commonwealth of Pennsylvania, acting through the department of environmental resources, has been actively engaged in a program to promote hydroelectric development in the State of Pennsylvania both at privately owned dams and those which we own and operate.

We are at the current time coapplicant or applicant before the Federal Energy Regulatory Commission for a number of projects on our own sites. We have been working with private developers, municipalities or combinations of private developers and municipalities pursuing several of those projects, so we are here before you today to give a perspective both as a State regulatory agency and a State proprietor of major dams and other facilities which may have benefits as hydroelectric sites.

Our five primary concerns are as follows. First, the preservation of the State's rights as a proprietor of the dams and reservoirs, to select the best method for developing hydroelectric power at those sites.

Second, a clarification of the State and municipal preferences for receiving preliminary permits and licenses, including the treatment of such things called hybrid applications which are combinations of State or municipal and private developers.

Third, the relationship between the FERC and State or interstate agencies in deciding issues relating to comprehensive water management.

Fourth, the evaluation and adjustment of FERC's jurisdiction to focus on those projects which are truly of national significance, and fifth, the FERC's administrative proceedings, including notice to parties, conferences, hearings, and other procedures which may streamline the process and make it more expeditious and effective.

In my testimony I will summarize rather briefly about the rights of a State as proprietor. We have found a number of problems in trying to pursue the development of our sites, those sites where we own the water rights, the facility, in fact, in many cases, have staff onsite all the time. One of the problems is, in pursuing our own sites, we find the Federal Power Act does not give a clear honoring of the ownership of a facility by either State or municipality. We have found ourselves in competition with either the municipality or hybrid entities of municipalities and private developers.

One of our recent experiences was at four dams on the Schuylkill River which we own and operate. We happened to apply with a private developer, having made the decision that a joint venture was probably the best way to develop these four dams.

In the process of proceeding through FERC, FERC determined that the hybrid application of the State as owner and a private developer did not permit the State's preference and, therefore, awarded the permit to the private developer. Now the private developer does have certain problems. First of all, he has to get on site and negotiate with us. The problem with it is that we worked with another private developer very closely to come up with a plan that we both felt comfortable with. The developer who applied without consulting us got the permit.

It seems that that type of a preference, that type of honoring of the State's ownership really rewards those who bypass the owners of the project, who proceed directly in a rush to the courthouse in front of FERC and do not lead to the best kind of development, do not lead to cooperative ventures.

The second problem we have is in trying to proceed in an orderly process in identifying how we wish to develop a site. We in the State of Pennsylvania would prefer doing our own preliminary feasibility studies and determining whether it should be developed by the State by a joint venture or by private developers leasing the State site. By having the feasibility study in hand, both State and the private developers will have a better idea of whether the project is feasible and what it is worth.

Therefore, when they come to the State and offer us either bids or competitive proposals, we have some reasonable judgment on which to decide whether the project is feasible and which proposal is best.

Under the Federal Power Act, that kind of competitive proposal process really can't occur because once a preliminary permit is issued, that gives preference long before the feasibility study is done, and the State is told literally who its dancing partner will be. There is no ability to have competition, to see who can come up with the best deal for the public. When we are dealing with major public investments, those in which we have literally spent in one case $40, $50 million for a dam, to lease on the basis of a judgment made in Washington rather than a judgment we make working with the developer is very troublesome.

We suggest four reforms that would lead to we believe a better process. We believe the Federal Power Act should be amended to instruct FERC to adopt procedures which assure that first State and interstate agencies are properly notified and consulted regarding the filing of any permit or license application affecting sites which they own.

Second, that no permit or license be issued for dams without the concurrence of the affected State or interstate agencies which own the project.

Third, preference and priority over all other applicants ought to be granted to the application filed by the agency which owns and operates the dam.

Fourth, the power of eminent domain should not be given to any private party to condemn State or interstate agency sites or storage rights held in a reservoir operated by a State or interstate agency.

Some of the same problems arise in the general field of State and municipal preferences. Unlike my colleague from the Edison Electric Institute, I believe there is a reasonable basis for recognizing that water rights, waters flowing in interstate streams, have a special public nature and that the public ought to receive the benefits before a private party acquires them. That I think was the original theory of the Federal Power Act, and it still makes sense today if it is applied judiciously.

Unfortunately, in the pursuit of hybrid applications, we have seen several problems. First, private developers offering to a municipality a moderate sum of money in order to acquire their name in order to qualify for the municipal preference.

Second, we have had applications of municipal or quasi-municipal agencies which have no apparent capability of taking on a hydroelectric project some hundreds of miles from the site.

Because there is no clear policy by FERC for the handling of two municipalities or two hybrid applications, especially at the preliminary permit stage, we find that those who rush to the courthouse first get the permit. That is without regard to who owns the project, who operates the project, and whether we are dealing with a relatively small borough or municipality or a State. Those kinds of policies have to be spelled out by Congress in the Federal Power Act. That isn't something we really expect an administrative agency to do.

Unfortunately, FERC has chosen to deal with the problem of hybrid applications by literally banning them or saying that they qualify for no preference. That has another public policy implication. It means that a State or municipality may not enter into a joint venture with private enterprise, and at a time when such joint ventures, such cooperative efforts between the public and private sectors are so needed to improve our energy resources, we have a public policy which discourages it, if not makes it impossible to act effectively.

We suggest a number of alternate tests for what could be a qualified, bona fide hybrid application. Where a municipality or State owns a dam, it could legitimately enter into a private enterprise, enter in with private enterprise in a joint venture. Similarly, where it is going to put up part of the financing or going to participate in developing the site, in a real sense perhaps 10 or 25 percent of the interest in the power or 10 or 25 percent of the financing would be a decent test that the municipality or State really was interested as a partner.

The third field of interest we have is the relationship between FERC and State/interstate water management agencies. When the Federal Power Act was originally passed, there were very few State or interstate agencies that truly had comprehensive water resources planning and management, and therefore, it was seen that one Federal agency would try to take a view of the regional problems, how best to develop the regional water resources in the public interest and make a decision about pursuing hydroelectric development.

Things have changed rather dramatically in the field of water resources management today. Most States, perhaps not all, but most States have much more sophisticated water planning and management programs. In our State we have a 22 volume State water plan which includes the identification of hydroelectric power sites. We have a staff of close to 100 engineers who spend all of their time in the water resources planning and management. They are familiar with the sites in the State both private and State.

The question is who is in a better position to make a decision about comprehensive water resources management, including hydroelectric development, in an area. Is it a State or interstate agency which is responsible for water supply, recreation, flood control and all the other myriad interests in those water resources, or is it a Federal agency which has a relatively narrow mission in energy development? Somehow there must be a partnership of those two interests. These water managers must have a much stronger say in how the whole picture develops in a region as well as the Federal energy regulators.

This brings me to the question of FERC jurisdiction. My colleague has noted the tremendous problem of a multifold increase in applications. With that increase in applications before FERC, the staff finds itself in less of a position to take a critical look at the applications before it and make a judgment as to what is the best plan or project.

Many of the small scale projects that are now before FERC really do not need Federal intervention and Federal regulation. In many cases, even though there are exemptions or waivers, what we are really talking about is a slightly less cumbersome procedure in front of FERC, not a true exemption. These projects remain regulated in the Federal Power Act. They remain preemptive of State involvement.

The Pennsylvania energy policy has advocated an amendment to the Federal Power Act to exclude totally jurisdiction over small-scale hydro projects of 25 megawatts or less, especially on noncommercial streams and non-Federal projects. Under those conditions, States would take over licensing of these small-scale projects. We believe this is consistent with the recognition of States as chief water managers, and it also would allow the States using their already existing regulatory programs—for example, our Dam Safety and Encroachments Act—to look at the whole picture of how those dams and reservoirs are operated.

Now we don't look forward to a new burden, but we believe that in many cases States have more flexible line procedures than the Federal Government. The type of issues raised by small-scale projects are really not appropriate to a resolution through adversary processes which are the hallmark of the Federal Power Act. We found that less formal regulatory procedures such as conferences rather than adversary hearings are usually more expeditious and productive in resolving the conflicts between competing uses.

Finally, the question of administrative procedures—we have some commisseration as a fellow bureaucrat with the problems of the staff of the Federal Energy Regulatory Commission. With the multifold increase in applications, the paperwork is backlogged because the basic procedures of the Federal Power Act were not meant to deal with the number of applications now pending before the Commission.

The problem is that we have forgotten that administrative procedures are supposed to help bring out facts, to focus on conflicts, and to lead to a reasoned, thoughtful decision. Instead we have a procedure which tends to cause more paperwork than decisionmaking. The logjam in processing applications has led to some due process problems. For example, while most agencies count notice to a party at the time of mailing an order, FERC counts an appeal time from the time that the Commission meets. Unfortunately, due to the backlog, quite often an order will not get out during the 30-day period after the Commission has met. We have received ourselves several orders 2 days after the appeal period had run. Our ability to find out about orders is delayed by the problem of trying to get copies from the FERC file room which is now starting to be closed, and we must subscribe to a commercial service in order to find out the orders on our own projects.

The solution to this problem may lie in three directions simultaneously. First, adjusting FERC jurisdiction to phase out or phase in an exemption of small scale projects along the lines I previously discussed would allow the Commission to concentrate more of its time on the large projects which are truly of national significance.

Second, the provisions for notice and appeals should be amended by Congress to start the clock running from the time an order is actually mailed to parties, and finally, both Congress and the administration should seek to assure that budgetary and staff time and resources are adjusted and balanced with the responsibilities of the Commission under the act.

Now I have been perhaps rather critical of FERC in some of these remarks, but I think it is because we wish to see a process and a partnership between the States, the public and private enterprise, to make hydroelectric work. We have a goal in our State of 400 megawatts within 10 to 15 years of hydroelectric development. We will only reach that goal if we work together to find a better process that is more effective in the public interest.

[The prepared statement of Mr. Weston follows:]

TESTIMONY OF
R. TIMOTHY WESTON
ASSOCIATE DEPUTY SECRETARY FOR RESOURCES MANAGEMENT
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES

Mr. Chairman, Honorable Members of the Subcommittees:

On behalf of the Commonwealth of Pennsylvania's Department of Environmental Resources, I wish to express to the Subcommittee our appreciation of this opportunity to provide comments on the Federal Energy Regulatory Commission's process for regulating and licensing hydroelectric projects.

I am R. Timothy Weston, Associate Deputy Secretary for Resources Management. My duties include overseeing the Commonwealth's programs dealing with dam safety, water obstructions, water resources management and projects. I also serve as Governor Thornburgh's alternate on the Delaware and Susquehanna River Basin Commission, two federal-interstate compact agencies with broad regulatory and management authority in the field of water resources development, conservation and management.

Interests of the Pennsylvania Department of Environmental Resources

In order to give you some perspective, let me provide a little background on the Department's interests in the field of hydroelectric development.

The Department of Environmental Resources, and its predecessor agencies, has served as the Commonwealth's prime water management agency for over 70 years. The Department has broad statutory responsibility to inventory the State's water resources, develop a State Water Plan, issue water allocations, regulate dams and water obstructions, and implement a water quality management program. The Department is specifically mandated to "study, consider and determine upon a public policy with regard to the conservation, marketing, and equitable distribution of the water and power to be derived from the water resources of the Commonwealth."

The Commonwealth, through the Department, has a clear constitutional duty to manage, conserve and develop Pennsylvania's water resources as a public trust for the benefit and use of all the people. Article I, Section 27 of the Commonwealth's Constitution provides:

> "The people have a right to clear air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."

In our role as a water management agency, the Department has actively participated in the efforts of the Governor's Energy Council in developing a comprehensive energy policy for our State. One of the key planks of that policy, which we strongly endorse, calls for actions to encourage and facilitate the development of renewable energy sources, including hydroelectric projects. Governor Thornburgh recently introduced a package of legislation which, coupled with certain administrative and regulatory reforms, is designed to assist and make more attractive investments in hydropower facilities. We are working to foster a partnership between the public and private sector to implement responsible, cost-effective hydroelectric projects.

In addition to its general planning and management functions, the Department has extensive expertise in the design, construction and operation of dams and other water control structures. The Department has designed, constructed, owns and operates some 88 dams and reservoirs, and another 75 flood control structures throughout the Commonwealth. The facilities under the Department's jurisdiction range in size from small, single-purpose recreation lakes, to substantial multi-purpose reservoirs, such as the 25 billion gallon George B. Stevenson Dam and the 64 billion gallon Pymatuning Reservoir.

In conjunction with compact river basin commissions and other agencies, the Department has arranged to purchase storage capacity in a number of Federal reservoirs, constructed and operated by the Corps of Engineers, pursuant to the 1958 Water Supply Act, 43 U.S.C. §390b-f. This storage capacity is, in turn, utilized to support downstream municipal, industrial and agricultural supplies, to repel salinity intrusion, to improve water quality and to protect instream uses. Such storage purchase arrangements have been made, for example, at the Beltzville and Blue Marsh Reservoirs in northeastern Pennsylvania.

A significant number of dams owned or operated by the Department, or in which we have storage interests, are potentially feasible sites for hydroelectric development. In the interest of promoting small scale hydroelectric generation, we are actively cooperating or participating in a number of hydro projects.

The Department is the joint holder with the Delaware River Basin Commission preliminary permits for two hydro projects (Blue Marsh and Prompton). We have filed a joint application with the City of Easton on the Chain Dam, a former canal facility currently owned jointly by the City and State. DER is joint applicant with DRBC involved in contested proceedings regarding Beltzville and F. E. Walter Reservoirs, and in similar competing application proceedings over the Cowanesque Reservoir in the Susquehanna Basin. We are joint applicants with a private developer on several projects involving several State owned and operated dams, and have filed individual applications to conduct feasibility studies at our Nockamixon, Pymatuning, George B. Stevenson and Pine Run Reservoir sites. In addition, DER owns and operates five dams for which preliminary permits have been issued to private developers, with our consent.

As both a state water management agency, and a government entity with a strong interest in encouraging hydroelectric projects in a manner designed to protect and enhance the efficient utilization of public water resources, we offer this testimony.

Our basic concerns focus on five primary issues:

1. Preservation of a State's rights, as proprietor of a dam or reservoir, to select the best method of developing hydropower at a site.
2. Clarification of State and municpal preferences for receiving preliminary permits and licenses, including the treatment of "hybrid" applications and applications filed by interstate compact agencies.
3. The relationship between FERC and State or interstate agencies in deciding issues relating to comprehensive management of water resources.
4. Evaluation and adjustment of FERC's jurisdiction to focus on projects of truly national significance.
5. FERC's administrative procedures, including notice to parties, conferences, and hearings.

The Rights of a State as Proprietor

As noted before, the Commonwealth is the owner and operator of a large number of dam and reservoir facilities, and has invested additional millions of dollars in public funds to purchase water storage capacity in several Federal reservoirs. One of our fundamental concerns revolves around the role of FERC, versus the State, in selecting how best to develop and manage such sites in the public interest.

The Federal Power Act entrusts to FERC the authority to select the "plans that are best adapted to develop, conserve, and utilize in the public interest the water resources of the region." The Act appears to make no distinctions between projects using water resources in general (such as construction of a new dam by a power company) and proposals to use existing facilities already developed by a public agency.

We believe the issues presented by an existing dam owned by a State or interstate agency, or a Federal reservoir where States or interstate agencies have entered into commitments to purchase storage capacity, are unique and deserve special statutory attention. The issue boils down to this: who is in a better position to judge the best method of developing hydropower at a State dam or how to balance hydroelectric potentials with other uses of the State reservoir? Is it the State which has developed the dam and reservoir, and is responsible to all the people for providing multiple benefits from state-financed facilities; or a Federal agency with a relatively narrow mission of energy regulation? Which is more likely to reflect regional needs or a comprehensive view of the public interest?

The record of recent proceedings is not very encouraging regarding the protection afforded State proprietary interests in FERC licensing procedures. In some cases, preliminary permit applications have been filed by private parties for hydropower development at such dams without proper notice to, or consultation with, the affected States. Moreover, some parties have expressed the questionable view that FERC can give private developers the right of eminent domain to condemn and take over any State-owned or financed reservoir, regardless of its authorized purposes. We believe FERC should adopt a clear policy affording affected States preference and priority in developing State-owned or State-assisted reservoirs.

In discussions a few months ago with FERC staff, it was implied that decisions would be handed down giving preferences to owners of dams over competing applicants. However, such a policy has not been followed in several recent decisions with which I am familiar.

Let me give you just one example. A private developer, known as Chain Dam Hydroelectric Corporation, without prior consultation or notice, to the State filed for a preliminary permit on four Schuylkill River Dams - three of which are owned and operated in whole or part by the Commonwealth. We had been working with another developer, American Hydro Power Co., on a proposal for the same dams and filed our own joint application before receiving notice from FERC of Chain Dam's filing. On September 24, 1981, FERC ruled that because the State had filed a hybrid application with a private developer, it could not claim a "municipal preference." FERC proceeded to completely disregard the State's ownership of the sites and instead awarded the permits to Chain Dam, who had filed first.

This type of decision appears to reward those who bypass States and fail to consult with those agencies responsible for owning and operating sites; it punishes the conscientious developer who works with a State in preparing a mutually acceptable package.

The FERC procedures for issuing preliminary permits and licenses raise another, equally troublesome, problem for State proprietors of existing dams. FERC award of a permit or license effectively forecloses a dam owner's ability to choose to whom to lease hydro development rights, and thus the ability to invite competition in presenting the best proposal for leasing State lands and facilities. FERC essentially tells us with whom we must deal - who will be our dancing partner. The State cannot seek bids from other parties, or pick the proposal which gives the best deal, the highest return on the public's investment and the most reasonable development scheme.

Governor Thornburgh recently announced legislative proposals which contemplate a more open, competitive process for leasing hydro development rights at State dams. Under the proposed Pennsylvania Hydroelectric

Facilities Act, it is contemplated that DER will conduct feasibility studies on the most promising State-owned sites before making a decision on whether the Commonwealth should develop the site directly or lease it to another agency or private entity. Feasibility study results would allow both the Commonwealth and others to make more rational decisions on how to proceed. Even if the Commonwealth eventually decides to grant a lease or franchise rights for private development at a State site, the completion of a feasibility study would aid in the submission of more knowledgeable, realistic, and meaningful competitive bids and proposals, and in the selection of the proposal which best serves the public interest. The bill establishes a competitive proposal process for leasing State lands, dams and hydro development rights to private parties. However, it is clear that the Federal Power Act must be amended to make such a process workable.

For these reasons, we strongly endorse the policy position adopted by the Interstate Conference on Water Problems and States of the Ohio River Basin Commission. We believe the Federal Power Act, and instruct FERC to adopt procedures, which assure that:

1. States or interstate agencies are properly notified and consulted regarding the filing of any permit or license application at an existing dam owned by the State or interstate agency, or which has storage purchased by the State or interstate agency;

2. No permit or license will be issued at such dams without concurrence by the affected States or interstate agencies;

3. Preference and priority, over all other applicants, shall be given to an application filed by a State or interstate agency that owns the dam or has rights to storage in a reservoir; and

4. The power of eminent domain shall not be given to any party to condemn facilities, lands, or storage rights in an existing reservoir held by a State or interstate agency.

State and Municipal Preferences

In establishing a preference for States and municipalities in the receipt of preliminary permits and licenses under the Federal Power Act, we believe Congress was attempting to recognize the special "public" nature of America's water resources. The nation's waters are not owned by any private party; they are a resource shared in common and held in public trust for the use and enjoyment of all our people. While our country has a strong tradition of private enterprise, the public's use ought to have first preference in the development of public natural resources. The benefit and enjoyment of public water resources by the larger public should be given priority over development which will profit only a few individuals.

This basic philosophy for managing resources in the public trust remains valid today. The execution of that philosophy, through administration of the municipal preference provisions of the Federal Power Act, has encountered a number of recent problems - which can and must be resolved to again make the preference effectively serve the public interest.

In recent months, with the filing of masses of applications - especially for small-scale hydro projects - we have noted several disturbing developments.

The first involves the filing of "hybrid" applications by a municipality and private entity, where the municipality does not appear to have a bonafide interest in pursuing hydroelectric development. In several cases in our State, township, borough or city councils have been approached by private entrepeneurs offering to pay the municipality a nominal to moderate sum (or other consideration) in exchange for the use of the municipality's name on a joint application. The purpose was not to use a municipally-owned dam, or enter into a true joint venture with substantial contributions by the municipality. The fundamental reason behind the "joint" application appeared to be to use the municipality as a front to obtain preference over other private applicants, or to compete with another municipality.

A second problem, related to the first, involves applications by municipal or quasi-municipal agencies which have no apparent capability to undertake hydroelectric developments, either technically or financially. We have witnessed applications filed by a small borough, with less than 50 residents, to develop a major federal reservoir. Similarly, in a nearby State, a small community recently filed applications on a series of Federal and other dams which were 50 to over 100 miles away. These municipalities have no reasonable basis for purusing development of such a scope, or maintaining the project in proper fashion once built.

Third, there is a lack of clear policy by FERC where two municipalities, or hybrid applicants involving municipalities, are competing for the same site. Some have suggested that a first come, first served rule applies. Such a rule, however, fails to recognize that not all municipalities are equal. Should FERC give preference on this basis where two municipalities are competing, but one is the owner or operator of the dam site? Should FERC give preference to a borough or township, which is a creature of the State, over a competing application filed by the creator State? What if the State is the owner of the dam; can or should FERC assume it can give the power of eminent domain to a lower level of government to acquire State lands and facilities? These questions become even more troublesome where one of the competing applicants is a hybrid, and the municipal "partner" is participating in name only.

FERC has recognized the problems created by some hybrid applications. In a recent decision (City of Fayetteville Public Works Commission), FERC ruled that an application filed jointly by a municipality and a non-municipal agency - a hybrid applicant - was not entitled to the State or municipal preference. While this may appear to address the problems decribed above, the solution chosen by FERC may not represent the best public policy, and may in fact compound the problem. Under FERC's interpretation, an application filed by a State which owns a dam and works with a private developer to add hydropower facilities has no preference, and a lower priority than a competing application from a town located hundreds of miles from the State-owned reservoir. The ruling discourages bona fide joint ventures between government and private enterprise, at a time when such cooperation is most badly needed.

There are several valid reasons for the filing and pursuit of joint or hybrid applications. In some cases, both a private and public entity may own an existing dam and adjacent lands where the project is to be located (as is the case in several of Pennsylvania's canal and river dams). In another instance, a project may have a capacity which exceeds the needs of either the private entity or the State/municipal applicant; by sharing the project, both may receive the benefits of lower per unit costs and maximum site development. A hybrid applicant may, in some instances, have additional flexibility in arranging financing.

One of the main reasons our State has contemplated and pursued joint applications is the Commonwealth's ownership of the dams where development is contemplated. In order to assure that the public, which has already made extensive investments at the site, is fully protected in the development and operation of a hydro project, and share in its benefits, the Commonwealth has adopted the policy of filing single or joint applications on most of its own facilities.

For these reasons, we believe Congress should allow for hybrid applications. In place of FERC's rule, we would suggest a series of alternative tests be established for determining when a hybrid application represents a bona fide municipal or State interest and involvement qualifying for a preference under §7(a) of the Federal Power Act. These tests might include the following:

(1) The State/municipality owns or operates the existing dam or hydroelectric power site, or owns a significant portion of the dams or site (for example, 25%).

(2) The State/municipality holds significant rights to storage or other water rights in the reservoir, whose waters may be utilized by the proposed hydroelectric project.

(3) The State/municipality is entitled to, and has a projected need for, a significant portion of the power to be produced by the proposed facility. (10 to 25% might be a minimum test of significant interest in the power).

(4) The State/municipality has demonstrated a significant participation in the financing, development or operation of the proposed project (for example, is pledged to finance 25% of the project, or is entitled to a significant portion of the revenues).

If any of these four tests were satisfied, the hybrid application would appear to qualify as a bona fide exercise of the State/municipal preference.

We further believe that Congress should recognize that agencies of the State - representing all the people in an area - are worthy of preferencial consideration over a township, borough, city or other substate agency, especially when it comes to developing water resources which flow across many municipal boundaries.

Relationship Between FERC and State or Interstate Water Management Agencies

When the Federal Power Act was first passed, there were few if any State or interstate water management programs which were truly comprehensive in nature. The theory of the Act was that hydropower projects ought to be evaluated from a comprehensive, regional perspective, and not governed by "parochial" interests of narrowly focused State or local regulations.

The situation today is vastly changed. States have greatly broadened their water planning and management efforts, reaching across the spectrum of water quantity and quality issues. Our own 22 volume Pennsylvania State Water Plan, for example, encompasses all aspects of water supply, flood control, fish and wildlife, recreation, navigation, water quality improvement and other water-related needs. Interstate and regional entities, such as the Delaware and Susquehanna River Basin Commissions, have undertaken to adopt and implement truly comprehensive water plans and programs which address water problems throughout a watershed, regardless of political boundaries.

FERC maintains that, by law, it has the discretion to judge what is "comprehensive water management" and what development of hydropower best serves the water interests of a region. Despite language contained in more recent laws, such as the Delaware and Susquehanna Compacts, requiring Federal agencies to act in a manner consistent with adopted regional plans, FERC has taken the position that the views of comprehensive State and interstate water management agencies have no greater standing than those of any other party to a FERC proceeding.

This problem is compounded when FERC is issuing licenses on an existing reservoir which is vital to implementation of a regional plan. For example, the Delaware River Basin Commission's plan recognizes the Beltzville and F. E. Walter reservoirs as critical to the regional salinity control and flood damage operations of the basin. Operations of these reservoirs must be closely coordinated with several New York City reservoirs upstream, and four other lower basin dams.

DRBC has been recognized by a compact, jointly adopted by four states and Congress, as the agency to coordinate and to direct operations, metaphorically play the regional "flow piano." DRBC is also authorized, by Federal and state law, to develop hydropower facilities. In order to extend multiple use of the reservoirs, while preserving operational control of these prime basin facilities, DRBC applied to FERC for preliminary permits to study the feasibility of hydropower development at these sites. FERC chose, however, to give the permits to two competing boroughs - substate municipalities. In contrast to DRBC, these municipalities have no basinwide interest, accountability or water management responsibility. FERC's rationale in such cases is that a comprehensive water management agency, even one recognized by Congress, is no more than a municipality under the Federal Power Act.

The time has come to reconsider the theory behind the Federal Power Act in light of modern realities. In both interest and attitude, most State and interstate water management agencies are now probably in a better position to balance competing interests involved in water resources development than a single Federal agency whose prime mission is energy regulation. In judging what hydroelectric development plans are best adapted to develop, conserve and utilize the water resources of a region, Congress should give FERC clear and unmistakable instructions to consult with, listen to, and act consistent with truly comprehensive State and interstate water management plans.

Evaluation of FERC's Jurisdiction

One of the key provisions of legislation now pending before Congress would allow FERC to waive all or part of its jurisdiction under the Federal Power Act over small-scale hydro projects, defined as having installed capacity of 15 megawatts or less.

I should note that this type waiver is not the same as a full statutory exclusion. Under a waiver, a small-scale project remains regulated under the Federal Power Act, at least to some extent. Even though FERC is not carrying out its full responsibilities, it appears that States remain preempted by the Federal Power Act from addressing safety, environmental or water resources issues arising from such federally-waived projects.

The Pennsylvania Energy Policy has taken the position that the Federal Power Act should be amended to totally exclude jurisdiction over small scale hydro projects (25 Mw. or less), especially on streams other than commercially navigable rivers or on federal projects. Under this concept, States would take over licensing activities and regulate the projects; Federal preemption would be removed. This is consistent with recognition that States have prime water management responsibilities, and are now much more sophisticated in comprehensive water resources planning and development than may have been the case when the Federal Power Act was first adopted.

It is appropriate to reexamine whether FERC's current jurisdiction over hydroelectric development is focussed on projects with real national significance.

FERC jurisdiction over development on Federally owned sites and projects in navigable waters (applying traditional definitions) probably makes sense. Extension of that jurisdiction to smaller hydroelectric projects on tributary streams, even though they sell some small quantity of electricity on the utility grids, is more difficult to justify.

Perhaps half or more of the applications now pending for projects in Pennsylvania fall in the later category. If FERC did not have jurisdiction, regulatory authority would automatically be extended under our State's existing Dam Safety and Encroachments Act and Limited Power Act.

Our professional staff, which now handles over 1500 permits a year under these State laws, may not be enthusiastic in taking on a new workload. But if jurisdication were adjusted in phases, I believe we could accept responsibility for many of the small projects at existing dams now brought before FERC. In fact, many of these proposed hydro developments are at dams which have previously been solely regulated by the State.

I would hope that if the States are allowed to accept jurisdiction, we would be allowed to develop more flexible and streamlined procedures in dealing with small-scale hydro projects. The type of issues raised by such prjects are really not appropriate to resolution through the legalistic, adversary processes applicable to large projects under the Federal Power Act and federal administrative procedures. We have found that less formal regulatory processes - such as conferences rather than adversary hearings - are often more expeditious and productive in resolving conflicts.

FERC Administrative Procedures

This brings me to our final concern, the promotion of more effective administrative procedures for carrying out FERC's duties under the Federal Power Act.

We need to keep in mind that the goal of administrative procedures (whatever those procedures might be) is to protect the rights of all interested parties, to gather the information needed for a rational decision, and to expedite the resolution of coflicts between competing interests. The objective of any set of administrative rules should be to bring out the facts and aid thoughtful decision-making.

In this regard, we have noted a troublesome problem in FERC's decision and notice procedures. It is an all too common practice for FERC to issue an order, and then the paperwork is caught for several weeks in a logjam before mailing it to the parties.

As a fellow public servant (some peole call us "bureaucrats"), I commiserate with the problem confronting the Commission's staff. FERC is trying to deal with a many fold increase in applications - and hence related paperwork - with less resources and a process never designed to handle such a burden. Without adequate staff and equipment to support the administrative process, it is virtually guaranteed to backlog, frustrating the very purposes of the program.

At the same time, the logjam in processing actions and notification of parties can create serious "due process" problems. While most agencies count notice and service as effective upon mailing, FERC counts from the day the Commission meets. With a 30-day time fuse for most appeals or responses, parties all too often get their first notification of FERC action after the time for response has expired.

The only way to find out in a timely fashion about a Commission action affecting your application or interests is to station a person at the Commission, to read every agenda and sit through each meeting. FERC has given notice that it is cutting off even the reading and copying of orders at its public reading room. Instead, one must subscribe to a commercial reporting service to find out what happened.

One must wonder if this is what the founding fathers meant when they demanded government follow due process in dealing with the rights of its citizens.

The solution to this problem may lie in three directions, which should be considered in tandem. First, adjusting FERC's jurisdiction, to phase in an exemption of small-scale projects along the lines discussed previously, which allow the Commission to concentrate its time and resources on fewer projects having a truly national significance. Second, provisions for notice and appeals should be amended to start the clock when the notices of FERC decisions are actually mailed to the parties. Finally, Congress and the Administration should seek to assure that the budgetary and personnel resources assigned to FERC and the burdens given to the Commission under the Act are kept in balance.

Conclusion

In concluding, let me reiterate the perspective in which we offer these suggestions. The purpose of these criticisms offered here is not to cast blame, or merely point to problems.

I believe we all share a common goal - to encourage well-planned hydroelectric projects, and to develop a more effective partnership between the public and private sector in pursuing investments in renewable energy sources. The challenge for us today is to work out a more efficient and effective process - at the Federal and State level - to administer the laws and programs necessary to protect the public interest. With creativity, cooperation and perseverance, we can meet that challenge.

Senator HUMPHREY. Thank you, Mr. Weston.

Mr. Magnuson?

STATEMENT OF GARY MAGNUSON, ASSISTANT DIRECTOR FOR WATER RESOURCES, WASHINGTON OFFICE OF CALIFORNIA GOV. EDMUND G. BROWN, JR.

Mr. MAGNUSON. My name is Gary Magnuson. As the assistant director for resources of the Washington office of California Gov. Edmund G. Brown, Jr., I appear before you today on behalf of the California Department of Water Resources to present a summary of the department's views on the development of small hydroelectric power projects and to comment briefly on the need for greater State involvement in the FERC decisionmaking process.

In the interests of time, Mr. Chairman, I respectfully request that my prepared statement be made part of the official oversight hearing record. I will be brief, as requested, and highlight our views as set forth in the prepared statement.

As the largest single user of electrical energy in the State, the department of water resources which has planned, designed, built, and now operates one of the largest water storage and distribution systems recognizes the importance of the future of small hydroelectric power development.

In fact, the department presently obtains half of its energy needs from 13 developed hydroelectric sites, and construction of 14 new small hydropower plants are planned for the future.

Although my appearance today occurs 1 week prior to the release of a major report by Governor Brown's task force on small hydroelectric development, the findings of which will be made available to the subcommittee, the department of water resources appreciates the opportunity to work with the subcommittee during its oversight investigation on this important issue.

In 1979 the department of water resources in cooperation with the U.S. Department of Energy undertook a study to evaluate the cost-effectiveness of equipping existing dams and aqueducts with hydroelectric powerplants in California. I have copies of the departmental report with me. The report found 240 of 285 potential sites to be cost-effective for development within the solid power capacity of approximately 500 megawatts.

The report also contains information on the regulatory approval process, project financing, engineering, and environmental and social issues involved in the small hydro development. I have additional copies with me and have given some to your staff.

The department of water resources also recently completed a study which assesses the environmental impact of hydro projects at undeveloped sites, requiring new impoundments or extensive diversions. The findings of the report which will also be made available for the subcommittee's files will provide a basis for a forthcoming State policy statement on small hydro development in California. The policy is expected to support hydro as a renewable energy source at both existing facilities and undeveloped sites where developments have little or no adverse effects on the environment.

The policy will also be in line with the State's efforts to provide timely and thorough information with respect to developers of small hydro on the rivers and streams of California. We are firm believers in a meaningful, productive consultation process. It is hoped that the availability and the use of this information will foster coordinated and efficient small hydro development within the State.

The spirit of coordination should also carry over to the relationship between FERC and the State of California in the review of specific projects. To this end, we would like to stress the need to increase State involvement in the FERC decisionmaking process and the need to reduce duplication of Federal/State efforts while preserving the State control over the use of State waters.

Mr. Chairman, that concludes my remarks. I will be glad to respond to any questions the subcommittees may have.

[The prepared statement of Mr. Magnuson follows:]

TESTIMONY OF THE CALIFORNIA DEPARTMENT OF WATER RESOURCES BEFORE THE SUBCOMMITTEE ON ENERGY REGULATION AND THE SUBCOMMITTEE ON WATER AND POWER OF THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

October 19, 1981

Mr. Chairman and Members, my name is Gary Magnuson. As the Assistant Director for Resources of the Washington Office of California Governor Edmund G. Brown, Jr., I appear before you today on behalf of the California Department of Water Resources to present a summary of the Department's views on the development of small hydroelectric power projects[1/] and to comment briefly on the need for greater State involvement in the FERC decision-making process.

The California Department of Water Resources has planned, designed, built, and now operates one of the largest water storage and distribution systems. Water from conservation storage reservoirs in the north is transported through the California Aqueduct -- a distance of over 400 miles -- to the rich farmland in the San Joaquin Valley and finally to the densely populated Los Angeles basin. Operating the pumps of the State Water Project (SWP) requires large amounts of energy and the Department is the largest single user of electrical energy in California. To help meet this need the Department has adopted an aggressive program to supply over 70 percent of its energy needs from renewable resources. Construction of 14 new small hydro power plants on the SWP is planned to meet a portion of this demand.

In January 1980, Governor Brown appointed a State Task Force to promote

1/ 30 megawatts or less.

and encourage the development of small hydroelectric projects at existing facilities by public and private entities. The Director of the Department of Water Resources, Ronald B. Robie, chairs this committee, and the other eight members are department heads with administrative or regulatory authority over hydro power plant construction. Recently the scope of the Task Force has been expanded to include consideration of projects planned at undeveloped sites. California is concerned about the environmental impact that could result if a great number of projects and associated transmission lines are built on free-flowing streams and rivers. The Task Force has spearheaded adoption of revisions in administrative procedure at the State level to streamline and expedite the permit and environmental review process. It has coordinated the publication of several pamphlets, bulletins, and newsletters to assist project developers. These materials provide information assessments, financing, locating equipment manufacturers, and the economic and the social aspects of hydro developments. In addition, the Task Force has followed the California Public Utilities Commission's implementation of Section 210 of the Public Utility Regulatory Policies Act of 1978 (PURPA) governing the prices, terms, and conditions of electric utility purchases of electric power from small power production facilities.

As you know, the sections of PURPA which provide for purchase of small power production output at avoided cost and exempt small power producers from certain aspects of the Federal Power Act, as well as favorable provisions in the Energy Security Act of 1980 have created an overwhelming interest in small hydro. Approximately 450 permit and license applications have been filed with the Federal Energy Regulatory Commission (FERC) for projects at existing facilities and on the rivers and streams in California. Review of these applications will present a challenge to both FERC and the State. It is our hope that FERC will work closely with California and weigh carefully the issues and concerns voiced by California agencies on specific projects.

In 1979 the Department of Water Resources, in cooperation with the U.S. Department of Energy, undertook a study to evaluate the cost effectiveness of equipping existing dams and aqueducts with hydroelectric power plants. The study identified 285 potential facilities and found about 240 of them to be cost effective. These cost effective sites have an installed capacity of approximately 500 megawatts. This report was published as Department Bulletin 211 and copies are available for members and staff of the subcommittees.

Hydro projects at existing dams and aqueducts usually have less potential for adverse environmental impacts. However, projects at undeveloped sites requiring new impoundments or extensive diversions can be very harmful to fish and wildlife, water quality, recreation, and other instream resources. Because of the concerns over the potential adverse effects of explosive and uncoordinated development of small hydro power plants on the rivers and streams of California, the Department of Water Resources has recently completed a study assessing the environmental impacts of these projects. Copies of the report will be forwarded to members of the subcommittees in the near future. Based on the findings of the report, the Governor's Task Force is currently formulating a State policy to govern development of small hydro in California. The policy will continue to support hydro, at both existing facilities and undeveloped sites where developments will have little or no adverse effect on the environment. However, projects adversely affecting fish, wildlife, and scenic and other valuable public resources will not be approved unless mitigation measures are undertaken. In accordance with State and Federal law, the policy will disapprove any hydro development on components of the State and National Wild and Scenic Rivers Systems. Project developers will be required to preserve and protect instream resources.

It is hoped that a State policy on small hydro will guide both developers and public agencies so that development of new energy sources will not mean needless destruction of valuable public resources. Copies of the policy statement will also be forwarded to members of the subcommittees for their information.

We would like to stress the need for increased state invlovement in the Federal Energy Regulatory Commission's decision-making process. It is becoming increasingly important to investigate means of preserving state control over the use of state waters. Decisions on the development of state resources must be made in the context of state laws governing allocation of water rights and protection of the environment. To disregard the framework of state laws in these areas is to compromise the integrity of state administrative, judicial, and legislative processes.

I appreciate the opportunity to present our views today and to discuss our efforts to maximize the utilization of this very valuable renewable energy resource — HYDROPOWER.

Senator HUMPHREY. Thank you, Mr. Magnuson. I want to acknowledge the arrival of Senator Murkowski who is the chairman of the Subcommittee on Water and Power, and he is actually cochairman of this hearing. It is a joint hearing, as stated at the outset.

Senator Murkowski, did you have an opening statement?

Senator MURKOWSKI. I have an opening statement, but I think in view of the time limitations and the large number of witnesses that we have today, that I will just submit it for the record.

I do thank the Senator, and I have some questions after these witnesses finish testifying.

[The prepared statement of Senator Murkowski follows:]

STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Good morning, ladies and gentlemen, and welcome to a joint hearing by my Subcommittee on Water and Power and Senator Humphrey's Subcommittee on Energy Regulation. As all of you know, this is a continuation of field hearings which were held in Anchorage, Alaska, and Concord, New Hampshire, to take testimony on hydroelectric power development and related licensing procedures.

All of you have experienced or are familiar with the process of developing hydropower resources. That is why you are here. The committee hopes to benefit from your experiences. We are here to listen to you. I cannot overemphasize our need and the need of the Congress to hear of your problems and your suggestions as to how these problems may be addressed.

Hopefully, after reviewing your testimony and that of the administration witnesses that will appear on the 29th of this month, the committee will be in a position to recommend administrative or legislative solutions which will promote the responsible development of this resource.

We have a heavy witness schedule today with many out of town witnesses. I thank you for your interest and for taking the time to advise the committee.

Senator HUMPHREY. Fine. Let's go back to Mr. Matson.

STATEMENT OF WILLIAM F. MATSON, EXECUTIVE VICE PRESIDENT AND GENERAL MANAGER, PENNSYLVANIA RURAL ELECTRIC ASSOCIATION

Mr. MATSON. Thank you, Mr. Chairman. At the risk of sounding disjointed, I am going to make some brief summaries of some of the points that I think need to be considered, and I will submit my testimony for the record.

My name is William F. Matson. I am the executive vice president and general manager of the Pennsylvania Rural Electric Association in Harrisburg, Pa. I also serve as the executive secretary of the Pennsylvania Municipal Electric Association. Together, these two organizations represent the interests of Pennsylvania's consumer-owned electric systems, 14 rural electric cooperatives, and 34 municipal electric systems. The goal of these systems is to provide their consumer owners with adequate and reliable supplies of reasonably priced electric energy.

I am appearing here today, however, as chairman of the Great Lakes Electric Consumers Association, GLECA. GLECA represents the consumers of the Great Lakes region's preference power customers, over 750 municipal and rural electric systems in nine States.

I am pleased to be here obviously, Mr. Chairman, and I commend you and the members of the Water and Power and Energy Regulation Subcommittees for holding these hearings.

One of the points that I make in here, and most of these points are substantiated in the rest of the paper, is the quantity of energy. We have talked about the availability, but our ability to have enough energy is important, but I would suggest that the price of energy is just as important as its availability. What is the use of having all of the energy we want if our consumers cannot afford to use it to heat our homes, cook our food and fuel the American industrial machine?

The Great Lakes Electric Consumers Association was established to promote the development by the Federal Government of the water power resources of the Great Lakes region. Before discussing the objectives of GLECA, I would like to take just a few seconds to outline some of the conclusions reached by a report issued earlier this year by the Federal Government.

The nine-State Great Lakes region comprises about 10 percent of the U.S. land area, an area about the size of France and Spain combined, and serves as the home for about 25 percent of the Nation's population.

Number 2, about 3 million kilowatts of hydroelectric capacity could be installed at dams already constructed and now operated by the U.S. Army Corps of Engineers.

Three, the preference customers of the region own 3,000 megawatts of generation, of which over 1,000 megawatts is oil fired.

Four, the development of the region's renewable water power resources could help reduce our Nation's dependence on petroleum by up to 20 million barrels of oil annually.

The Great Lakes Electric Consumers Association was organized to pursue two primary objectives. First, the organization supports efforts by the corps and other Federal agencies to develop the hydroelectric generating potential of the region, and second, supports the creation of a Federal power marketing agency to market power generated at federally owned facilities. There are Federal marketing agencies throughout the rest of the Nation, but none in the northeast part of the country. We think that that needs to be started very quickly in order to be ready when some construction is approved.

While GLECA is most interested in the development of the water power resources of the Great Lakes region, we believe Federal development of water power resources should be shared by the other States of the Northeast and Midwest, and we have been working with the Midwest Coalition and have had an opportunity to present testimony at their hearings.

We are very concerned about reports from our members throughout the region that indicate that the Corps of Engineers and other Federal agencies are not only considering withdrawing Federal participation from hydroelectric development projects, but that they are even considering ending the Federal Government's important and traditional role of maintaining and operating inland waterway facilities, and I back up some of that with other discussion.

There are several reasons why we believe the Federal Government should develop small scale hydroelectric projects in the Northeast and Midwest. First, we believe only the Federal Government possesses the great financial resources that will be necessary to develop the region's water power resources on a meaningful scale, and I go on to talk about the multipurpose concept under the Federal Power Act that I think is very important. To have a developer who develops water only perhaps for municipal purposes or a power developer who develops the site only for power purposes, as Tim Weston from Pennsylvania has mentioned, I think tends to create circumstances not in the best interest of the public. The multipurpose potential of every project, and I think it is important, it is vital, that every one of these remaining potential public uses or uses of public facilities be developed to the very wisest potential that it can be, and I hope that the statement backing that up will be looked at.

We oppose any effort by the Corps of Engineers or other Federal agencies to diminish the Federal role in the operation and maintenance of inland waterways. As the Federal Government pursues policies that allow our national rail system to fall apart, inland waterways will assume a more important role in moving raw materials to factories and finished products to market. In addition, many of the locks and dams on these inland waterways provide excellent potential sites for the development of small scale hydroelectric generating facilities, almost as an afterthought.

As previously mentioned, we support the establishment of a Federal power marketing agency, and of course, we strongly support the concept of granting preference in the sale of power generated at Federal facilities by the Federal power marketing agency to consumer-owned electric systems. We believe that the benefits of projects built with public money to harness publicly owned resources should flow as directly as possible to the people. In the case of federally owned hydroelectric generating facilities, we believe consumer-owned electric systems, municipal and rural electric cooperative systems, as well as State and Federal agencies, should receive preference in the purchase of this power generated to these facilities.

We don't choose to trade off our birthright for a mess of potage in the business of giving away the preference clause. As Theodore Roosevelt once upon a time said back in 1909:

> It is especially important that the development of water power should be guarded with the utmost care both by the national government and by the states in order to protect the people against the upgrowth of monopoly and to insure to them a fair share of the benefits which will follow the development of this great asset which belongs to the people and should be controlled by them.

In closing, Mr. Chairman, I would like again to express our strong support for the involvement of the Federal Government in the development of the hydroelectric generating potential of the Northeast and Midwest, and our support of the creation of a regional Federal power marketing agency.

The water power potential of the Northeast and Midwest represents a great national resource. We believe Congress has a right and a responsibility to protect this resource and to see that it is developed to most directly benefit the people who own it.

Thank you.

[The prepared statement of Mr. Matson follows:]

STATEMENT OF WILLIAM F. MATSON, EXECUTIVE VICE PRESIDENT AND GENERAL MANAGER, PENNSYLVANIA RURAL ELECTRIC ASSOCIATION

MY NAME IS WILLIAM F. MATSON. I AM THE EXECUTIVE VICE PRESIDENT AND GENERAL MANAGER OF THE PENNSYLVANIA RURAL ELECTRIC ASSOCIATION, 212 LOCUST STREET, HARRISBURG, PENNSYLVANIA. I ALSO SERVE AS THE EXECUTIVE SECRETARY OF THE PENNSYLVANIA MUNICIPAL ELECTRIC ASSOCIATION. TOGETHER, THESE TWO ORGANIZATIONS REPRESENT THE INTERESTS OF PENNSYLVANIA'S CONSUMER-OWNED ELECTRIC SYSTEMS; 14 RURAL ELECTRIC COOPERATIVES AND 34 MUNICIPAL ELECTRIC SYSTEMS. THE GOAL OF THESE SYSTEMS IS TO PROVIDE THEIR CONSUMER/OWNERS WITH ADEQUATE AND RELIABLE SUPPLIES OF REASONABLY-PRICED ELECTRICAL ENERGY.

I AM APPEARING HERE TODAY AS THE CHAIRMAN OF THE GREAT LAKES ELECTRIC CONSUMERS ASSOCIATION (GLECA). GLECA REPRESENTS THE CONSUMERS OF THE GREAT LAKES REGION'S PREFERENCE POWER CUSTOMERS, OVER 750 MUNICIPAL AND RURAL ELECTRIC SYSTEMS IN NINE STATES.

I AM PLEASED TO BE HERE TODAY, MR. CHAIRMAN, AND I COMMEND YOU AND THE MEMBERS OF THE WATER AND POWER AND ENERGY REGULATION SUBCOMMITTEES FOR HOLDING THESE HEARINGS.

WHILE IT APPEARS THE "ENERGY CRISIS" HAS EASED SOMEWHAT, I AM SURE WE CAN ALL AGREE THAT OUR NATION WILL NOT HAVE SUCCESSFULLY MET THE CHALLENGE OF THE ENERGY CRISIS UNTIL WE HAVE MOVED AWAY FROM OUR DEPENDENCE ON FINITE ENERGY RESOURCES.

QUANTITY OF ENERGY --- OUR ABILITY TO HAVE ENOUGH ENERGY --- IS IMPORTANT. BUT I WOULD SUGGEST THAT THE PRICE OF ENERGY IS JUST AS IMPORTANT AS ITS AVAILABILITY. WHAT IS THE USE OF HAVING ALL OF THE ENERGY WE WANT IF WE CANNOT AFFORD TO USE IT TO HEAT OUR HOMES, COOK OUR FOOD, AND FUEL THE AMERICAN INDUSTRIAL MACHINE? THEREFORE, MR. CHAIRMAN, I WOULD SUGGEST THAT THE

LEGISLATIVE AND EXECUTIVE BRANCHES OF THE FEDERAL GOVERNMENT SHOULD ENCOURAGE THE DEVELOPMENT OF INDIGENOUS AND RENEWABLE ENERGY RESOURCES; RESOURCES THAT CAN PROVIDE ADEQUATE QUANTITIES OF ENERGY AT A PRICE WE CAN AFFORD TO PAY. HYDROELECTRIC GENERATION SQUARELY MEETS THESE CRITERIA.

THE GREAT LAKES ELECTRIC CONSUMERS ASSOCIATION WAS ESTABLISHED TO PROMOTE THE DEVELOPMENT BY THE FEDERAL GOVERNMENT OF THE WATER POWER RESOURCES OF THE GREAT LAKES REGION. BEFORE DISCUSSING THE OBJECTIVES OF GLECA, I WOULD LIKE TO TAKE A FEW MINUTES TO DISCUSS THE WATER POWER POTENTIAL OF THE GREAT LAKES REGION. HERE ARE SOME CONCLUSIONS REACHED BY A REPORT ISSUED EARLIER THIS YEAR BY THE FEDERAL GOVERNMENT:

- THE NINE STATE GREAT LAKES REGION COMPRISES ABOUT TEN PERCENT OF THE UNITED STATES LAND AREA --- AN AREA ABOUT THE SIZE OF FRANCE AND SPAIN COMBINED --- AND SERVES AS THE HOME FOR ABOUT 25 PERCENT OF THE NATION'S POPULATION.
- ABOUT THREE MILLION KILLOWATTS OF HYDROELECTRIC CAPACITY COULD BE INSTALLED AT DAMS NOW OPERATED BY THE U.S. ARMY CORPS OF ENGINEERS.
- THE PREFERENCE CUSTOMERS OF THE REGION OWN 3,000 MEGAWATTS OF GENERATION, OF WHICH OVER 1,000 MEGAWATTS IS OIL-FIRED.
- THE DEVELOPMENT OF THE REGION'S RENEWABLE WATER POWER RESOURCES COULD HELP REDUCE OUR NATION'S DEPENDENCE ON PETROLEUM BY UP TO 20 MILLION BARRELLS OF OIL ANNUALLY.

THE GREAT LAKES ELECTRIC CONSUMERS ASSOCIATION WAS ORGANIZED TO PURSUE TWO PRIMARY OBJECTIVES. FIRST, THE ORGANIZATION SUPPORTS EFFORTS BY THE U.S. ARMY CORPS OF ENGINEERS AND OTHER FEDERAL AGENCIES TO DEVELOP THE HYDROELECTRIC GENERATING POTENTIAL OF THE REGION. SECOND, GLECA SUPPORTS THE CREATION OF A FEDERAL POWER MARKETING AGENCY TO MARKET POWER GENERATED AT FEDERALLY-OWNED FACILITIES.

WHILE GLECA IS MOST INTERESTED IN THE DEVELOPMENT OF THE WATER POWER RESOURCES OF THE GREAT LAKES REGION, WE BELIEVE FEDERAL DEVELOPMENT OF WATER POWER RESOURCES SHOULD BE SHARED BY THE OTHER STATES OF THE NORTHEAST AND MIDWEST THAT PRESENTLY DO NOT HAVE THE BENEFIT OF A FEDERAL POWER MARKETING AGENCY.

WE ARE VERY CONCERNED ABOUT REPORTS WE HAVE RECEIVED FROM OUR MEMBERS THROUGHOUT THE REGION THAT INDICATE THE CORPS OF ENGINEERS AND OTHER FEDERAL AGENCIES ARE NOT ONLY CONSIDERING WITHDRAWING FEDERAL PARTICIPATION FROM HYDROELECTRIC DEVELOPMENT PROJECTS, BUT THAT THEY ARE EVEN CONSIDERING ENDING THE FEDERAL GOVERNMENT'S IMPORTANT AND TRADITIONAL ROLE OF MAINTAINING AND OPERATING INLAND WATERWAY FACILITIES.

OVER THE YEARS, THE FEDERAL GOVERNMENT HAS ASSUMED THE RESPONSIBILITY FOR DEVELOPING HYDROELECTRIC GENERATING PROJECTS. THIS HAS ESPECIALLY BEEN THE CASE IN THE WEST AND SOUTH. ONE OF THE REASONS WHY THE FEDERAL GOVERNMENT HAS NOT BEEN AS ACTIVE IN THE NORTHEAST AND MIDWEST IS THAT THE POTENTIAL HAS NOT EXISTED FOR THE CONSTRUCTION OF LARGE-SCALE PROJECTS IN OUR REGION. HOWEVER, AS SMALL-SCALE HYDROELECTRIC GENERATING PROJECTS BECOME MORE FEASIBLE AS THE COST OF OTHER FORMS OF ENERGY INCREASES, THE POTENTIAL FOR FEDERAL INVOLVEMENT IN THE DEVELOPMENT OF PROJECTS

BECOMES GREATER. WE BELIEVE OUR NATION'S WATER POWER RESOURCES OFFER A WAY BY WHICH WE CAN DECREASE OUR DEPENDENCE ON PETROLEUM, ESPECIALLY IMPORTED PETROLEUM.

THERE ARE SEVERAL REASONS WHY WE BELIEVE THE FEDERAL GOVERNMENT SHOULD DEVELOP SMALL-SCALE HYDROELECTRIC PROJECTS IN THE NORTHEAST AND MIDWEST. FIRST, WE BELIEVE ONLY THE FEDERAL GOVERNMENT POSSESSES THE GREAT FINANCIAL RESOURCES THAT WILL BE NECESSARY TO DEVELOP THE REGION'S WATER POWER RESOURCES ON A MEANINGFUL SCALE. SECOND, WE BELIEVE THE FEDERAL GOVERNMENT HAS A RESPONSIBILITY TO SEE THAT THESE PRECIOUS RESOURCES ARE DEVELOPED SO THAT THE PEOPLE CAN RECEIVE THE BENEFITS OF THEM AT THE LOWEST POSSIBLE COST. THIS WILL RESULT FROM THE AVAILABILITY OF THE LOW-COST FINANCING THE FEDERAL GOVERNMENT CAN PROVIDE AND BECAUSE OF THE FACT THAT THE FEDERAL GOVERNMENT, UNLIKE PRIVATE DEVELOPERS, IS NOT INTERESTED IN MAKING A PROFIT FROM THE DEVELOPMENT OF THESE RESOURCES. AND THIRD, WE BELIEVE IT IS A MATTER OF EQUITY THAT THE NORTHEAST AND MIDWEST SHOULD, AT LONG LAST, RECEIVE A SIGNIFICANT INVESTMENT IN WATER PROJECTS. WHILE WE DO NOT BEGRUDGE THE HUGH INVESTMENTS OF FEDERAL TAX DOLLARS THAT HAVE BEEN MADE IN HYDROELECTRIC GENERATING PROJECTS IN THE WEST, WE DO BELIEVE THE TIME HAS COME FOR OUR REGION TO GET ITS FAIR SHARE.

WE OPPOSE ANY EFFORT BY THE CORPS OF ENGINEERS OR OTHER FEDERAL AGENCIES TO DIMINISH THE FEDERAL ROLE IN THE OPERATION AND MAINTENANCE OF OUR INLAND WATERWAYS. AS THE FEDERAL GOVERNMENT PURSUES POLICIES THAT ALLOW OUR NATIONAL RAIL SYSTEM TO FALL TO PIECES, INLAND WATERWAYS WILL ASSUME A MORE IMPORTANT ROLE IN MOVING RAW MATERIALS TO FACTORIES AND FINISHED PRODUCTS TO MARKET. IN ADDITION, MANY OF THE LOCKS AND DAMS ON THESE INLAND WATERWAYS

PROVIDE EXCELLENT POTENTIAL SITES FOR THE DEVELOPMENT OF SMALL-SCALE HYDROELECTRIC GENERATING FACILITIES.

AS PREVIOUSLY MENTIONED, WE SUPPORT THE ESTABLISHMENT OF A FEDERAL POWER MARKETING AGENCY FOR THE NORTHEAST AND MIDWEST TO COORDINATE THE DEVELOPMENT OF THE FEDERALLY-FINANCED HYDROELECTRIC GENERATING FACILITIES AND TO MANAGE THE MARKETING OF POWER FROM THESE FACILITIES. WE STRONGLY SUPPORT THE CONCEPT OF GRANTING PREFERENCE IN THE SALE OF POWER GENERATED AT FEDERAL FACILITIES BY THE FEDERAL POWER MARKETING AGENCY TO CONSUMER-OWNED ELECTRIC SYSTEMS. WE BELIEVE THE BENEFITS OF PROJECTS BUILT WITH PUBLIC MONEY TO HARNESS PUBLICLY-OWNED RESOURCES SHOULD FLOW AS DIRECTLY AS POSSIBLE TO THE PEOPLE. IN THE CASE OF FEDERALLY-OWNED HYDROELECTRIC GENERATING FACILITIES, WE BELIEVE CONSUMER-OWNED ELECTRIC SYSTEMS --- MUNICIPAL AND RURAL ELECTRIC COOPERATIVE SYSTEMS --- SHOULD RECEIVE PREFERENCE IN THE PURCHASE OF THIS POWER GENERATED AT THESE FACILITIES.

THE CONCEPT OF GRANTING PREFERENCE IN THE SALE OF POWER FROM FEDERALLY-OWNED GENERATING FACILITIES TO CONSUMER-OWNED ELECTRIC SYSTEMS HAS A LONG HISTORY AND HAS BEEN INCORPORATED INTO FEDERAL LAW ON MANY OCCASIONS DURING THIS CENTURY. WE ARE VERY CONCERNED, HOWEVER, ABOUT THE APPARENT EROSION OF THE "PREFERENCE CLAUSE." WE SHARE PRESIDENT THEODORE ROOSEVELT'S CONCERN THAT PUBLICLY-OWNED RESOURCES BE DEVELOPED SO THAT THEY CAN BEST SERVE THE PUBLIC INTEREST. HE SAID IN 1909:

> "IT IS ESPECIALLY IMPORTANT THAT THE DEVELOPMENT OF WATER POWER SHOULD BE GUARDED WITH THE UTMOST CARE BOTH BY THE NATIONAL GOVERNMENT AND BY THE STATES IN ORDER TO PROTECT THE PEOPLE AGAINST THE UPGROWTH OF MONOPOLY AND TO INSURE TO THEM A FAIR SHARE OF THE BENEFITS WHICH WILL FOLLOW

THE DEVELOPMENT OF THIS GREAT ASSET WHICH BELONGS TO THE PEOPLE AND SHOULD BE CONTROLLED BY THEM."

WE RECOGNIZE THAT THE FEDERAL GOVERNMENT WILL NOT BE ABLE TO DEVELOP THE FULL HYDROELECTRIC POTENTIAL OF THE NORTHEAST AND MIDWEST. IN THOSE CASES WHERE A SITE IS NOT DEVELOPED BY THE FEDERAL GOVERNMENT, WE URGE THIS COMMITTEE TO INSURE THAT THE FEDERAL ENERGY REGULATORY COMMISSION LICENSING PROCEDURE WILL LEAD TO THE DEVELOPMENT OF FACILITIES BY ENTITIES MOST INTERESTED IN SERVING THE PUBLIC AT THE LOWEST POSSIBLE COST.

WE ARE CONCERNED ABOUT THE "FUTURES MARKET" IN FERC HYDRO LICENSES THAT CAME INTO BEING AFTER THE PASSAGE OF THE PUBLIC UTILITY REGULATORY POLICY ACT (PURPA). MANY INDIVIDUALS AND COMPANIES HAVE APPLIED FOR FERC LICENSES NOT WITH THE INTENTION OF USING AN INDIGENOUS ENERGY RESOURCE TO PRODUCE LOW-COST ELECTRICITY FOR PUBLIC CONSUMPTION, BUT RATHER TO MAKE AS MUCH MONEY FOR THEMSELVES AS POSSIBLE. WE BELIEVE THIS IS WRONG. WE BELIEVE OUR NATION'S WATER POWER POTENTIAL IS A RESOURCE THE GOVERNMENT HOLDS IN TRUST FOR THE PEOPLE; AND THAT WHEN THIS POTENTIAL IS DEVELOPED, THE BENEFITS OF ITS DEVELOPMENT SHOULD FLOW AS DIRECTLY AS POSSIBLE TO THE PEOPLE. THEREFORE, WE STRONGLY SUPPORT A CONTINUATION OF THE PRACTICE OF GRANTING PREFERENCE IN THE LICENSING OF HYDROELECTRIC PROJECTS TO STATES AND MUNICIPALITIES AND WE URGE THAT PREFERENTIAL LICENSING BE EXTENDED TO RURAL ELECTRIC COOPERATIVES.

IN CLOSING, I WOULD LIKE TO ONCE AGAIN EXPRESS OUR STRONG SUPPORT FOR THE INVOLVEMENT OF THE FEDERAL GOVERNMENT IN THE DEVELOPMENT OF THE HYDROELECTRIC GENERATING POTENTIAL OF THE NORTHEAST AND MIDWEST AND OUR SUPPORT OF THE CREATION OF A REGIONAL FEDERAL POWER MARKETING AGENCY.

THE WATER POWER POTENTIAL OF THE NORTHEAST AND MIDWEST REPRESENTS A GREAT NATIONAL RESOURCE. WE BELIEVE CONGRESS HAS A RESPONSIBILITY TO PROTECT THIS RESOURCE AND TO SEE THAT IT IS DEVELOPED SO AS TO MOST DIRECTLY BENEFIT THE PEOPLE WHO OWN IT.

THANK YOU.

Senator HUMPHREY. Thank you, Mr. Matson. Mr. Frey?

STATEMENT OF THOMAS R. FREY, GENERAL COUNSEL, POWER AUTHORITY OF THE STATE OF NEW YORK

Mr. FREY. Thank you very much, Senator. My name is Thomas Frey, and I am general counsel to the Power Authority of the State of New York.

The Power Authority was founded by Franklin Delano Roosevelt in 1931 when he was Governor of the State of New York and is the largest State-owned public utility in the Nation. This organization is above all a builder and operator of hydroelectric projects, including St. Lawrence and the Niagara Falls projects at 3,200 megawatts, and the 1,000 megawatt pumped storage project at Blenheim-Gilboa. There is another 1,000 megawatt project under licensing, and we are in the process of exploring now about 48 megawatts of small hydro capacity as a part of the overall program for 1,650 megawatts of hydroelectric development in the State of New York.

In addition, we operate two nuclear plants, one oil-fired plant and several transmission lines. I would like to concentrate on one key issue germane to all hydro licensing, and three related issues of particular concern in the hydro area.

The area of water quality is an important step in reducing the time and, therefore, the cost as well as a major portion of the staff commitment for licensing hydroelectric projects of all sizes. The Power Authority recommends that the existing statutes be clarified to make explicit that these projects are not subject to sections 401 and 402 of the Clean Water Act. Congress passed the Clean Water Act to safeguard and restore the Nation's waterways by eliminating the discharge of pollutants. Hydroelectric projects, however, do not discharge the industrial, agricultural, or municipal wastes the act was designed to eliminate. They simply detour flowing water and place turbine generators in its path.

Since hydroelectric plants do not discharge any of the sewage, sludge, chemical wastes or other pollutants Congress intended to control, they should, therefore, be deemed subject, not be deemed subject to sections 402 and 401 of the act which provide for permits for discharges of pollutants.

In the small hydro area, this field, as you know, is in an uproar. Site owners and developers are embroiled in multiparty competitions of all sorts which have spilled over into both the Federal and State regulatory agencies. Technical development decisions are being forced, financial and staff resources are constrained, and unnecessary suspicion of fast-buck deals has spread through what should be an orderly and benign national effort to displace fossil fuel generation.

Simply summarized, it would appear that the causes of much of the excess confusion and competition are partly related to problems in licensing, being also directly related to the structure of the market.

In this context, the Authority offers three proposals for your consideration. One, to restore some natural equilibrium to the market for small hydro output, the very real and predictable benefits of displacing thermally fired generation should be split between the small power producer and the consumer.

Basing the value of small hydro generation on the avoided incremental or decremental cost of thermal generation is eminently reasonable. Giving all of the benefits of displacing fossil fuels to the producers and none to the consumer is, however, unfair.

In promulgating the regulations, the Federal Energy Regulatory Commission was careful to avoid placing the burden or utility rate applications on small power producers to establish production costs. Small power producers include cogeneration, biomass conversion, resource recovery, and geothermal small power production facilities, as well as small hydroplants.

It is not evident to the Authority that determining the cost of small hydro production in particular is so onerous as to impose an unnecessary burden on the producer since the technology is not very complicated. Surely some simple form similar to an income tax statement would suffice to establish costs. Given the costs and the decremental value, the benefits can be shared with half going to the ratepayers, half to the small power producer.

The purchase price for small hydro output would then fall midway between the decremental costs in each State, net, of course, of wheeling and line losses, and the project's power cost. The utilities purchasing from small power producers would simultaneously be required to pass on to their ratepayers the other half of the savings.

Second, insofar as income other than that generated by small hydro projects is sheltered or receives tax credits, the market for small hydro projects is skewed toward short-term gains. While it is true that small hydro is capital intensive and relatively expensive per installed kilowatt, the heavy accumulation of benefits in the early years has overstimulated interest in this enterprise. Because a small hydro license holds out to potential investors promises of a readily available shelter for otherwise taxable income, the license itself can be of great value. This explains in part the chaotic and potentially counterproductive competition we are witnessing today.

The Authority supports fully the use of tax credits as a public policy tool where appropriate. For small hydro, however, it is not at all clear that all the tax credits now available are necessary to stimulate investment. A more freely functioning market would still invite more than adequate investment in the development of the Nation's small hydro capacity in vew of the great long-term benefits of the energy.

We would recommend a downward adjustment in the energy tax credit for small hydro projects.

Third, Congress with foresight provided in PURPA for the exemption of small hydro projects up to 30 megawatts from all or part of the Federal Power Act and related regulations. The Energy Security Act subsequently modified this to provide for projects up to 5 megawatts, and more narrowly defined these regulations from which the projects could be exempted.

It is the Authority's opinion that section 405 of PURPA should be amended to exempt generically all small hydro projects at existing dams of up to 30 megawatts.

The Authority's experience with the exemption process has demonstrated that while the classes of exemption both promulgated and under proposal have maintained the substantive review requirements of license applications for major projects at existing dams, the benefits of reduced documentation and review time have been very important and helpful.

The current FERC proposal for a 5-megawatt generic exemption appears on the one hand drastically to reduce the substantive requirements while at the same time keeping the review requirement for the protection of water quality, fish and wildlife, historic sites, and endangered species presently required for license application.

The Authority is supportive of measures to require applicants to consult with and receive the approval of agencies entrusted with the protection of natural and historical resources with the exception of sections 401 and 402 of the Clean Water Act. We perceive little substantive difference between the present licensing application requirements and the proposed 5 megawatts generic exemption requirements. At the same time, the exemption process in our experience greatly reduces the time and documentation effort.

In addition, the wisdom in the present 5 megawatt case-by-case exemption of limiting the exemptions to site owners, or to those with an option to acquire adequate interest in the site for licensing purposes, should be preserved. This will assure site owners the option of developing sites themselves or negotiating a worthwhile price for their private property.

This provision in a 30-megawatt exemption would mute much of the competition for sites we are now witnessing. Thus increasing the exemption to cover sites up to 30 megawatts while keeping sound review requirements to protect natural and historical assets and limiting them to site owners or to those acquiring adequate interest will not only lighten the licensing burden and speed development, but will restore calm to this overheated market.

[The prepared statement of Mr. Frey follows:]

STATEMENT OF THOMAS R. FREY
GENERAL COUNSEL, POWER AUTHORITY OF THE STATE OF NEW YORK
BEFORE THE
UNITED STATES SENATE
SUBCOMMITTEE ON WATER & POWER
OCTOBER 19, 1981

HYDROELECTRIC PROJECT LICENSING

My name is Thomas R. Frey and I am General Counsel to the Power Authority of the State of New York.

On behalf of the Authority I am gratified by this opportunity to address several vital issues concerning hydroelectric project licensing and to share some of our thoughts with you.

The Power Authority, founded, as you surely know, by Franklin Delano Roosevelt in 1931 when he was governor of the State of New York, is the largest state-owned public utility in the nation. This organization is above all a builder and operator of hydroelectric projects. These include, of course, the St. Lawrence and Niagara Falls projects, with a combined capacity in excess of 3200 mW, and the 1000 mW pumped storage plant at Blenheim-Gilboa. We are currently seeking a license for another 1000 mW pumped storage plant at Prattsville and have two small hydro projects with a total of 8 mW of capacity under construction. Finally, we have nine additional small hydro sites with some 40 mW of capacity under various phases of licensing and study.

In addition to the hydroelectric projects, the Authority owns and operates two nuclear plants, one oil-fired plant and several major transmission lines. The Authority has also just received a license to construct a 700 mW coal/refuse-derived fuel plant. All of these existing projects together provide approximately one-third of New York State's electricity needs.

In return for the privilege of financing our projects with tax-exempt revenue bonds, it is the Authority's overriding mandate to provide the lowest cost electricity for the ratepayers of the State of New York.

In response to the massive escalation in the price of oil during the last decade and because of New York's very large dependence on oil-fired generation -- for which most of the oil is imported rather than domestically produced -- the Authority implemented a Ten Point Program to reduce by 50 percent the State's imported oil requirements.

The Ten Point Program approaches this effort through conservation, development of coal, wind, natural gas and wood resources, and the importation of Canadian hydroelectricity. A major share of this effort is, however, being devoted to the development of some 1650 mW of new hydroelectric resources.

It is from this perspective, then, that we wish to share with you some of our thoughts on the major problems associated with hydro licensing and to offer some solutions. In the interest of time, I will not go into many details on any of the points but rather recommend that if you have any questions we would be delighted to answer them and follow up with more detail in writing.

I would like to concentrate on one key issue germane to all hydro licensing and three related issues of particular concern in the small hydro area.

Water Quality

As an important step in reducing the time and therefore the cost as well as a major portion of staff commitment for licensing hydroelectric projects of all sizes, the Authority recommends that the existing statutes be clarified to make explicit that these projects are not subject to sections 401 and 402 of the Clean Water Act.

Congress passed the Clean Water Act to safeguard and restore the nation's waterways by eliminating the discharges of pollutants. Hydroelectric projects, however, do not discharge the industrial, agricultural or municipal wastes the Act was designed to eliminate; they simply detour flowing water and place turbine generators in its path. Since hydroelectric plants do not discharge any of the sewage, sludge, chemical wastes or other pollutants Congress intended to control, they should therefore not be deemed subject to section 402 of the Act, which provides for permits for discharges of pollutants.

Furthermore, section 401 authorizes the states to apply their own water quality standards, properly affording them the opportunity to safeguard the waters within their own boundaries with as much zeal as they deem appropriate, as long as minimum federal standards are met. The dilemma, however, is posed by the definition of the term "discharge."

There is ambiguity and inconsistency in the meanings of the term "discharge" as used in the two sections. Plain reading suggests that the term in section 401 means clearly the same as it means in the immediately succeeding section 402. States, however, have from time to time applied the certification requirements of section 401 to hydroelectric projects, substituting their own definition of "discharge" for the very clearly intended "discharge of pollutants."

This misreading has resulted in excessive delays, administrative costs and drawn-out litigation, and has frustrated the development of hydroelectric resources of all sizes. Clarification of Congressional intent to demonstrate the exemption of hydroelectric projects from sections 401 and 402 of the Clean Water Act will facilitate development of this non-polluting, cost effective natural energy resource.

Small Hydro

The small hydro field is, as you know, in an uproar. Site owners and developers are embroiled in multi-party competitions of all sorts which have spilled over into both the federal and state regulatory agencies. Technical development decisions are being forced, financial and staff resources are strained and unnecessary suspicion of fast-buck deals has spread through what should be an orderly and benign national effort to displace fossil fuel generation.

Simply summarized and stated, it would appear that the causes of much of the excess confusion and competition are partly related to problems in licensing, being also directly related to the structure of the market.

The small hydro development market has been structured such that essentially inflation-free small hydro power is guaranteed an escalating price, based on the incremental avoided cost of thermal generation, which is certain to escalate for a long time to come.

At the same time, investment costs are sheltered from taxation such as to make small hydro financing more attractive than it needs to be to induce development of this natural resource. This is consequently an unncessary tax expenditure.

Finally, future small hydro licensees can look forward to the last recourse of the federal power of eminent domain to acquire the requisite interest in land to develop a project.

This, of course, is a terrifying prospect to site owners and leads to a loss of the security inherent in the enjoyment of private property rights.

Let me emphasize here that the Authority is supportive of private development of small hydro and other renewable resources. Indeed, the great strength of this nation's economy is its roots in private initiative. On the other hand, we are witnessing a great commotion created by an imbalance in a market which we think can be stabilized with a few adjustments.

In this context then, the Authority offers three proposals for your consideration.

I. To restore some natural equilibrium to the market for small hydro output, the very real and predictable benefits of displacing thermally fired generation should be split between the small power producer and the consumer.

Basing the value of small hydro generation on the avoided incremental or decremental cost of thermal generation is eminently reasonable. Giving all of the benefits of displacing fossil fuels to the producer and none to the consumer is, however, unfair.

In promulgating the regulations, the Federal Energy Regulatory Commission (FERC) was careful to avoid placing the burden of utility rate applications on small power producers to establish production costs. Small power producers include cogeneration, biomass conversion, resource recovery, and geothermal small power production facilities, as well as small hydro plants.

It is not evident to the Authority that determining the costs of small hydro production, in particular, is so onerous as to impose an unnecessary burden on the producer since the technology is much less complicated. Surely some simple form similar to an income tax statement would suffice to establish costs. Given the costs and the decremental value, the benefits can be shared, with half going to the ratepayers, half to the small power producer. The purchase price for small hydro output would then fall midway between the decremental cost set in each state (net, of course, of wheeling and line losses), and the project's power cost. The utilities purchasing from small power producers would simultaneously be required to pass on to their ratepayers the other half of the savings.

II. Insofar as income other than that generated by small hydro projects is sheltered or receives tax credits, the market for small hydro projects is skewed toward short-term gains. While it is true that small hydro is capital intensive and relatively expensive per installed kilowatt, the heady accumulation of benefits in the early years has overstimulated interest in this enterprise.

Because a small hydro license holds out to potential investors the promise of a readily available shelter for otherwise taxable income, the license itself can be of great value.

This explains, in part, the chaotic and potentially counterproductive competition that we witness today.

The Authority supports fully the use of tax credits as a public policy tool where appropriate. For small hydro, however, it is not at all clear that all the tax credits now available are necessary to stimulate investment. A more freely functioning market would still invite more than adequate investment to develop the nation's small hydro capacity, in view of the great long-term value of this energy. We would recommend a downward adjustment in the energy tax credit for small hydro projects.

III. Congress, with foresight, provided in the Public Utility Regulatory Policies Act (PURPA) for the exemption of small hydro projects of up to 30 mW from all or parts of the Federal Power Act and related regulations. The Energy Security Act subsequently modified this to projects of up to 5 mW and more narrowly defined those regulations from which the projects could be exempted.

It is the Authority's opinion that section 405 of PURPA should be amended to exempt generically all small hydro projects at existing dams of up to 30 mW.

The Authority's experience with the exemption process has demonstrated that while the classes of exemptions both promulgated and under proposal have maintained the substantive review requirements of license applications for major projects at existing dams, the benefits of reduced documentation and review time have been very important and helpful.

The current FERC proposal for a 5 mW generic exemption appears on the one hand drastically to reduce the substantive requirements while at the same time keeping the review requirements for the protection of water quality, fish and wildlife, historic sites and endangered species presently required for license application.

The Authority is supportive of measures requiring applicants to consult with and receive the approval of agencies entrusted with the protection of natural and historical resources, with the exception of sections 401 and 402 of the Clean Water Act. We perceive little substantive difference between the present license application requirements and the proposed 5 mW generic exemption requirements. At the same time the exemption process, in our experience, greatly reduces the time and documentation effort.

In addition, the wisdom in the present 5 mW case by case exemption of limiting the exemptions to site owners, or to those with an option to acquire adequate interest in the site for licensing purposes, should be preserved. This will assure site owners the option of developing sites themselves or of negotiating a worthwhile price for their private property. This provision in a 30 mW exemption would mute much of the strident competition for sites we are now witnessing.

Thus, increasing the exemption to cover sites up to 30 mW while keeping sound review requirements to protect natural and historical assets and limiting them to site owners or to those acquiring adequate interest will not only lighten the licensing burden and speed development, but will restore calm to this overheated market.

Conclusion

There is no question that development of the nation's hydroelectric resources is a vitally important effort. That effort is at present frustrated and confused by a few lopsided provisions of the licensing process and an overstimulated market.

The Authority has offered four proposals for your consideration in facilitating the development of hydroelectric resources.

These are, in summary:

- the clarification of existing statutes to make explicit the exemption of hydroelectric projects from sections 401 and 402 of the Clean Water Act;
- the splitting of the savings between ratepayers and small hydropower producers;
- the downward adjustment of the Energy Tax Credit as applied to small hydroelectric projects; and,
- the generic exemption from licensing of all small hydroelectric projects under 30 mW at existing dams, incorporating site owner preference.

It is the Authority's belief that enactment of these modifications will greatly speed and at the same time stablize the development of this virtually inflation-proof, non-polluting natural resource.

Thank you.

Senator HUMPHREY. Mr. Dubrow?

STATEMENT OF MORGAN D. DUBROW, SENIOR STAFF ENGINEER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Mr. DUBROW. Mr. Chairman, thank you for the opportunity to participate in the hearing. I am the senior staff engineer of NRECA, and as such, represent all of our 1,000 rural electric systems in 46 States which serve 125 million people in 75 percent of the land area of this country.

NRECA supports the statement made by Mr. Matson from Pennsylvania and subscribes to everything that he said. I want to take this opportunity, Mr. Chairman, to thank this committee for passing S. 306. This bill authorizes as you know the addition of hydroelectric facilities in a number of reclamation projects and authorizes an expenditure of $273 million to initiate construction of those facilities. We believe that this is a constructive effort which will contribute to the energy requirements of the country and provide additional low-cost energy.

I have to observe, Mr. Chairman, that as I interpret it, the basic water resource policy of the Reagan administration appears to be predicated as stated on an economic recovery program that calls for a balanced budget which leads to no new starts in comprehensive water and power development.

It is our view that it would be far better to press forward with those capital-type investments in water power projects that are entirely self-supporting and truly broaden our country's economic base.

Turning now to the Federal Energy Regulatory Commission, I think that the division of hydropower is to be commended for the tremendous effort that it has put forth in order to process the multiplicity of license applications which are now before the Commission. It has been pointed out here that they actually have processed in the past 12 months 5 to 7 times the number that they processed some 2 years ago. The Commission has taken some steps already to simplify the procedures for handling and granting preliminary permits and licenses for hydroelectric power.

However, it is clear to me, and I think to others, that there should be some changes and clarification of the Federal Power Act. The Commission was asked by Congressman Bevill and furnished him suggestions which would amend the act to enable the Commission to proceed with what I will call one-stop licensing which would simplify and accelerate the process and clarify the differences between the Commission and the Environmental Protection Agency and the Department of the Interior, the Corps of Engineers and others who are required to review these applications.

I have to observe that both the Corps of Engineers and the Interior Department have at times delayed action on license applications by the Commission by posing questions, some of which I feel are extraneous and which tend to delay the request for permits by our cooperatives and other power entities to construct hydroelectric facilities at existing Federal projects. Having worked for both the Corps of Engineers and the Bureau of Reclamation, I can certainly understand this attitude, but it is not consistent with getting the most development of hydro facilities in the quickest time.

I would like to comment also that over the past several years a number of our cooperatives have applied for applications and have been in the process of getting ready to request licenses to build projects and have lost their preliminary permits because of the Federal Power Act.

Now as you know, the Federal Power Act was passed in 1920 and the Rural Electrification Act came along in 1935. The Federal Power Act gave preference to State agencies and municipalities and, of course, it didn't give it to rural cooperatives because there were none at that time, but it certainly is consistent with the purposes of the Federal Power Act to eliminate monopoly and see that the power is distributed to the public and to the people for the Federal Power Act to provide preference for rural electric cooperatives, and to this end our membership on January 29 at our 39th annual meeting in San Francisco unanimously passed a resolution which is included in my testimony requesting that this action be taken.

I would just like to point out, Mr. Chairman, that many people are not aware of the fact that the development of our hydroelectric resources in the United States are less than a third done. The Army engineers have recently completed a study which indicates that there are 2,100 potential feasible sites where you could develop 57 million kilowatts of capacity and 149 billion kilowatt-hours of energy, and it is my conviction and the belief of our agency that the Government ought to get on with this job to the extent that it can, and encourage others to do the same thing.

One other point that I would like to make in closing is that there have been a multiplicity of licenses filed by individuals who, as has been pointed out by other witnesses here, have gotten these licenses for the purpose of bartering them, and this, of course, is contrary to the basic purposes of the Federal Power Act, and we would urge the Congress to urge the Commission to deny such applications.

That concludes my statement, and I thank you again for the opportunity to testify. I will be pleased to answer any questions.

[The prepared statement of Mr. Dubrow follows:]

STATEMENT OF MORGAN D. DUBROW
NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
Before
The Subcommittee on Water and Power and
The Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources
October 19, 1981

Mr. Chairman and members of the Subcommittees, my name is Morgan D. Dubrow. I am Senior Staff Engineer of the National Rural Electric Cooperative Association (NRECA).

We appreciate this opportunity to participate in this joint hearing to express our views on hydroelectric development and the Federal Energy Regulatory Commission's licensing process.

NRECA is a national service organization representing more than 1,000 rural electric systems in 46 states. These systems, mostly all cooperatives, serve more than 25 million consumers in 2,600 of the 3,100 counties in the United States. Members of NRECA provide electricity to about 75 percent of the land area of this nation. For many years NRECA has championed development of our nation's water and power resources. We support comprehensive multipurpose development of the nation's river basins, recognizing that such development will yield large amounts of power and other benefits with minimum adverse environmental impact.

NRECA welcomes this opportunity to thank the Senate Energy and Natural Resources Committee for reporting out, and the Senate for passing S. 306, a bill to authorize the addition of hydroelectric power facilities at a number of Bureau of Reclamation dams. It authorizes the expenditure of $273 million to initiate work on 12 existing projects in four states. You may be assured that NRECA will support the companion House of Representatives" bill for these important projects. We believe the Senate passed this important measure in recognition of the great need for independent energy resources particularly hydro power, a renewable, non-polluting resource.

We at NRECA recognize that the basic water resources policy of the Reagan Administration is predicated on an "economic recovery program" that calls for a balanced budget which will lead to no new starts in comprehensive water and power development by the Federal Government. In our view it would be far better to press forward with those capital-type investments in water power projects that are entirely self-supporting and truly broaden our country's economic base.

I also wish to take this opportunity to commend the Division of Hydro Power Licensing of the Federal Energy Regulatory Commission for its efforts in expediting the processing of preliminary permits and licenses for hydroelectric projects. I feel sure that this Committee is aware that the Division of Hydro Power Licensing has seen its workload multiplied many times over the past several years; there have been applications for more permits and licenses during the past year than there were over the previous five years. We understand that the Division of Hydro Power Licensing has processed some 1600 applications during the past 12 months as contrasted with 300 applications per year two years ago, without any increase in staff.

The Commission has greatly simplified its procedures for the handling and granting of preliminary permits and licenses for hydroelectric project. We urge the Commission to continue these efforts. The real problem lies in the wording of the Federal Power Act. What is really required is specific language amending the Act that gives the Commission the authority to set definite schedules and deadlines so that a one-stop licensing process is a reality. At his request, the Federal Energy Regulatory Commission provided the necessary language to achieve this objective to Congressman Tom Bevill, Chairman of the Subcommittee on Energy and Water Development of the House Committee on Appropriations.

The lack of clarity in the Federal Power Act, as written, has at times resulted in delays over jurisdictional problems with other agencies, namely, the

Environmental Protection Agency, Department of the Interior, the Corps of Engineers and others that must be consulted to fulfill the provisions of the Coordination Act and other legislation. There have also been problems at times with state agencies which unduly delayed the processing of preliminary permits and license applications. Again, many of these problems could readily be resolved by definitive changes in the Federal Power Act.

I recognize that the Chief of Engineers and the Secretary of the Interior are diligent in their efforts to carry out the Administration's and the Congress' policy to encourage the development of power at existing Federal projects by non-Federal interests, both public and private power entities. However, there have been instances when the Federal construction agencies have delayed the processing of preliminary permit and license applications by seeking answers to numerous questions, some of which are not really pertinent.

In order to better utilize our natural resources, to reduce oil imports and conserve our fossil fuels, a number of our member systems have sought preliminary permits for hydroelectric facilities. Unfortunately, there have been instances in which municipalities (entitled to preference under the 1920 Federal Power Act) have made later filings on the same sites and thereby received the preliminary permit. NRECA recognizes and respects the preference rights of the state subdivisions and municipalities under the Federal Power Act. We, however, would remind the Committee that the rural electric cooperatives did not come into being until after the passage of the Rural Electrification Act of 1935. It is clear to us that had they existed when the Federal Power Act became law, our member systems would have been included under the preference provisions of that Act. In this regard, there follows a resolution which was unanimously approved on January 29, 1981, at our 39th annual meeting in San Francisco, California:

> Under the present Federal Power Act, however, if a rural electric cooperative files for a preliminary permit or license for a hydroelectric project, a municipality or state agency, by

merely filing a competing application, can exercise its preference rights and thereby take the proposed project away from the rural electric cooperative. Rural electric cooperatives in all regions of the United States have experienced this problem and, after expending sume of money to study development of projects, have seen municipalities and state agencies use their preference rights and leave rural electric cooperatives completely out of hydroelectric projects. The lack of equal preference by rural electric cooperatives in licensing hydroelectric projects has created such uncertainty that many rural electric cooperatives are now not willing to seek to develop hydroelectric projects.

When Congress originally included municipal and state agency preference in hydroelectric licensing procedures, no rural electric cooperatives were in existence. Since that time, Congress has consistently indicated that rural electric cooperatives should receive equal preference along with municipalities and state agencies in such matters as power output from Federal projects. In this light, therefore, we feel no just reason exists for rural electric cooperatives not to receive equal preference status in connection with licensing hydroelectric projects.

We believe further it is contrary to the national interest not to attempt to create an atmosphere where maximum development of hydroelectric projects is paramount. To this end we request and urge the Congress of the United States to amend the Federal Power Act so that rural electric cooperatives will receive equal preference rights along with municipalities and state agencies in licensing hydroelectric projects, and we urge support of such legislation by all interested organizations, including the American Public Power Association.

We will resist vigorously any effort--legislative, judicial, or administrative--to repeal or significantly dilute the nation's preference laws relating to the marketing of Federal power and the initial issuances or subsequent reissuances of hydroelectric licenses.

It is our strong conviction that the continued development of our nation's hydroelectric power resources is so important that it should be a combined effort by the Federal Government and all segments of the utility industry. We still have in this nation a tremendous hydro power potential. The recent national hydro power study of the Corps of Engineers indicated that there are 2,100 potentially feasible sites which could provide up to 57,000 megawatts of additional capacity and an average annual energy production of 149,000 GWH. You may be assured that our Association will continue to support the development of hydro power by the Federal Government. We will also encourage our member systems to expand their efforts to build hydroelectric power facilities, both at existing Federal projects and at our other existing dams. Our members also will endeavor to develop economically feasible, potential hydroelectric sites in their service areas.

NRECA is firm in the view that hydroelectric power facilities should be developed in accordance with the fundamental purposes of the Federal Power Act for public purposes so as to prevent monopolization of the power facilities by private interests. For this reason, we would ask the Commission in issuing of permits and licenses to make every effort to achieve this objective. Finally, we also ask the Congress and the Federal Energy Regulatory Commission to oppose the efforts of certain private groups that have sought to obtain large numbers of preliminary permits and licenses on a wholesale basis, thereby precluding the development of many worthwhile sites by our rural electric cooperatives.

We appreciate the opportunity to participate in this important hearing and will respond either verbally or in writing to any questions.

Senator HUMPHREY. Thank you, Mr. Dubrow.

Senator Murkowski?

Senator MURKOWSKI. I have a couple of questions which I would like to pose at this time. I believe one of the earlier witnesses, I believe it was Mr. Weston, indicated his recommendation that the smaller sized hydroplants be eliminated from FERC control and basically put under the authority of the control of the State.

Is that generally correct?

Mr. WESTON. That is correct.

Senator MURKOWSKI. What is your definition of small?

Mr. WESTON. I think in the testimony I suggested that there were three tests—first, under 25 megawatts. And what I suggested is, the further nuance is that it be primarily on nonnavigable rivers and on non-Federal resources. A number of the projects in the State of Pennsylvania are on Federal resources and clearly the Federal Government has an interest.

Senator MURKOWSKI. My concern is in the case of anadramous fisheries that might be affected within a river system, that would not be covered under your three points here obviously. Nonnavigable doesn't say anything about anadramous fisheries. That could have a substantial effect on a broad area of a river and nonnavigable stream going through a number of States.

How would you suggest we get around that?

Mr. WESTON. I think I should emphasize that in terms of the type of agencies that I would see stepping in in the place of the Federal Government, our own agency has a very strong protection of migratory fisheries. In fact, we are now engaged in litigation with FERC to try to restore anadramous and cadadramous fisheries in the Susquehanna River. Had the same project been under State control, the problem of fish passage facilities would have been solved at the original licensing, not 50 years later.

I believe you will find as much sensitivity at the State level to many of the issues that reportedly are being reviewed by FERC as FERC staff itself has, perhaps more so. Our own agency in the State of Pennsylvania, reviewing every dam other than Federal licensed dams, goes through all of the reviews that FERC does plus many more. We run a water quality program, a fisheries program, major portions of the energy program, the water supply program and the flood control program. We obviously aren't interested in all those uses, and review very carefully the applications that come before us.

Senator MURKOWSKI. My concern is not necessarily the case of your State nor for that matter mine, but it seems quite likely that many States would not be geared up to handle the obligation that is associated with this regulatory procedure.

I would appreciate your comments or any other members of the panel that might care to address that matter which I consider to be in effect that some States are very, very sophisticated in their program because they have need to be, and others, smaller States or States that have not for one reason or another by geography or simply the fact that they have little hydropower, do not have that experience and rely on the Federal Government.

What is your suggestion to step over that hurdle?

Mr. **Weston**. There are two ways of stepping over it. First, let me observe, I serve on one of the interstate conferences that deals with water management matters. It is true that not all States are equally sophisticated nor need they be. Most of the States that have significant numbers of hydroelectric sites are probably the more sophisticated. California, New York, Pennsylvania, New Jersey, Ohio all have fairly sophisticated programs.

The one way we could step over it is to follow a practice which Congress has done in a number of other acts, although I abhor it at times, and that is the primacy method of trying to find a—if the State develops a qualified program, one which does address these issues, then allow the exemption to apply on a State-by-State or region-by-region basis rather than across the board. That would be an acceptable method of addressing the problem of those States that are willing to take on the responsibility and those that are not quite ready for it yet.

Senator **Murkowski**. That is an interesting suggestion. I have one other question, and that is with regard to the obvious, and this I would pose to the entire six-member panel, whoever might feel the most qualified to address it, and that has to do with the substantial increase in applications before FERC. I think in 1980 there were 44, and in the first 10 months of 1981 according to my information there were more than 1,700 applications pending, which obviously indicates that there is a high degree of specialization going on.

How would you suggest that be addressed? Do you feel that the States can address that more effectively than FERC, or do you think that should come under the continuing obligation of FERC and even FERC is having a difficult time? How do you police whether someone is legitimately trying to develop a site or simply holding it for a period in order to make a quick turnover and in consequence make some money on the side?

Mr. **Weston**. Let me step in for a second because I believe we have as many of those applications as any of the States.

I think what we saw originally was those who were looking at the tax allowances of the Federal law were stepping in quickly and applying on a mass basis knowing they wouldn't get all the sites they were applying for, but they were all engaged in a mutual rush to FERC to try to be the first in line. We had one applicant that filed 30 in a period of a week. There was no way that applicant was going to be able to handle it.

What we did at our State is bring in some of those applicants to the State agency and sit them around the table and say now which ones are you really interested in? Which ones can you handle? They began admitting that they couldn't all handle them, and we suggested who was probably in a better position, and helped them try to settle some of those problems in front of FERC by giving them a hint as to who we would support.

There is no easy way out even if a State takes over. You are going to have some speculation in the field. I think FERC has, now that some preliminary permits are outstanding, has taken steps to make sure there is good faith progress by those doing feasibility studies. There haven't been too many of them pulled back for having failed to start the feasibility study on time.

Senator MURKOWSKI. Is there any criteria that they might have to meet?

Mr. WESTON. In terms of before or after the preliminary permit? After the preliminary permit, FERC requires that they proceed on an orderly basis to stay within the time limit of the preliminary permit and show that they are doing certain steps of the feasibility study on time.

Senator MURKOWSKI. I was referring to financial capability or capacity to develop a project that they would make application for.

Mr. WESTON. We asked developers—let me speak as to the proprietor of a site. We asked developers to come in and show you their balance sheets. FERC does not. We ask them how much do you have in capital to put up to do this feasibility study? If you do it, where are you going to get your financing? Do you have letters of commitment in some fashion?

Senator MURKOWSKI. You say FERC does not. Is that strictly at their pleasure or do you know whether they require it?

Mr. WESTON. I believe that under the Federal Power Act, and I can be corrected by officials from FERC, that in judging which plan is best suited to develop the water resources of a region in the public interest, FERC may ask the qualifications of an applicant to carry out the project and not to flub it. They have not seen fit to do it, nor do they have the staff time to do it. There is no way you can look at those 1,700 applicants this year and ask any more than the briefest financial questions without becoming involved in a morass of balance sheets. I think that is why FERC has not engaged in it, and I can understand why they haven't done it.

Senator MURKOWSKI. I have no further questions, Senator. If you will allow me to prevail, I understand we are going to have another hearing on October 29?

Senator HUMPHREY. Yes.

Senator MURKOWSKI. As a continuation of this.

Senator HUMPHREY. Yes. Correct.

Senator MURKOWSKI. Fortunately or unfortunately, the President has come down with the pipeline waiver package which I am going to have to excuse myself on which is another regulatory matter affecting energy, and I don't want to seem to bow out of this hearing by any means, but I would hope that you will excuse me and allow me to make this up at the October 29 hearing.

Mr. DUBROW. Senator, I would like to add just one comment. I believe strengthening the Federal Power Act would give the Commission the clear authority to look into the financial capability and to eliminate some of these people quickly, and I believe that was covered in some of the recommendations they made to Congressman Bevill.

Senator MURKOWSKI. Thank you.

Senator HUMPHREY. Gentlemen, I have a number of questions, and since time is of the essence, I would like to have a response from each of you, and I would like to ask you to answer quickly. We will run through the questions on that basis and try to get as much done here as possible before we go on to the next panel.

I will proceed from my left to my right. The first question is, and I realize some of you have already touched on this, but to summarize and to put it in a nutshell, the first question is in what way, specific ways, can the licensing process be reformed to speed it up while still protecting the rights of the parties and other important considerations such as the environment? Mr. Ellis?

Mr. ELLIS. Mr. Chairman, I think the exemption that we have under consideration that will increase the level of exemption to 15 megawatts is certainly one very positive way that the action by FERC can be speeded up because this does not obviate the developer from many of the responsibilities that he has at the Fish and Wildlife, Corps of Engineers, Department of Interior and so on and so on. It simply relieves the FERC staff from going through a great many motions that are very time consuming and very staff heavy which is really the problem right now.

I think that is probably the primary and easiest way that speed could be achieved.

Senator HUMPHREY. I think that is a good point. I believe that Mr. Weston or someone made that comment earlier, that the exemption process is not truly what it implies. It is somewhat less burdensome to be sure, but there are many conditions still attached to the exemption.

Mr. Matson?

Mr. MATSON. I don't think I want to add anything to the two or three things that have been said except that the exemption of up to whatever can be agreed upon, whether it is 20- or 30-megawatt sized projects, would reduce the workload to the Commission so drastically—they are spending I assume, at least the requirements are the same, as much work, on a 5-megawatt site as they would be on a 100-megawatt site, and I think for reasons that don't make all that good sense, so if that is changed so that they don't have the burden of the smaller sites, then they could then do a better job on the larger ones that really need their careful review.

Senator HUMPHREY. Mr. Weston?

Mr. WESTON. I have already commented on the exemption. There is only one other method I can think of that would be helpful. On many of the small sites, the concept of a preliminary permit isn't really saving the developer that much in terms of securing his investment. It may be worthy of consideration whether the preliminary permit vehicle is appropriate to small sites.

If that was eliminated, all FERC would be looking at would be licenses after they actually had plans inhand to review.

Senator HUMPHREY. Mr. Magnuson?

Mr. MAGNUSON. Senator, the department of water resources, although involved in small hydro development of its own, and as to reviewing, the State water resources control board has the permit authority for water rights and water quality, however, the department of water resources I want to stress, and my purpose in being here today, is the sharing of the information and providing as much information to the future developers of the small hydro in California as much as possible to reduce the misunderstanding, to reduce the conflict that could occur to speed up the process, so I can echo what has already been said, but I want to emphasize we are going out of our way to provide workshops, information and so forth to reduce the misunderstanding and to streamline when the projects are there.

Senator HUMPHREY. Mr. Frey?

Mr. **Frey**. Yes, Senator. I mentioned the 30-megawatt exemption in my testimony, and I think that there is a second side to it, and that is the question of the number of applicants who were there mostly because I think the criteria that is established is too broad and encourages that kind of speculation.

I think some attempt to reduce the number of applicants by removing some of these incentives would be a very important part of it.

Senator **Humphrey**. I couldn't help but think when you made that statement earlier that David Stockman would be glad to hear you advocating the elimination of a tax credit.

Mr. **Frey**. Yes, sir—the free market.

Senator **Humphrey**. Yes. Mr. Dubrow?

Mr. **Dubrow**. Mr. Humphrey, I can only agree with what Mr. Frey has said, and that is giving more specific authority to the Commission to eliminate some of these applications. Some of them have applied for as many as 120 permits which obviously they are not going to develop.

Senator **Humphrey**. Do you think we should give greater power to the States, and by the same token, diminish the power of FERC and the other agencies?

Mr. **Ellis**. Although I cannot speak for EEI, yes, I think up to a certain size, and I would not want to speculate at the moment on what that size ought to be, but certainly for the small developer that got into prominence after PURPA, I think the States could certainly handle those affairs and not hold up the Federal agencies.

Mr. **Matson**. That is exactly the point. The States can very well handle the smaller ones. The Feds I think must continue to handle the larger ones that inherently ought to be multipurpose and have more things involved in them.

Mr. **Weston**. Yes.

Mr. **Magnuson**. California stands ready to work with the subcommittee on this important issue.

Mr. **Frey**. Yes, generally we are in favor of that. I agree with Mr. Matson that sometimes the States can be more vigorous than the Federal Government, sometimes to our benefit and sometimes to our detriment.

Senator **Humphrey**. I have found that many contractors are opposed to diminishing Federal authority for that reason. They find it easier to deal with the Feds than some of the States.

Mr. **Dubrow**. I have to agree with the others. I think on the smaller projects most of the States could handle them and most of the States that have the hydro potential do have the mechanism within the State today to do it.

Senator **Humphrey**. Let me run one by you about property rights and the rights of ownership.

Can you give us your opinion about any changes that might be needed in this realm? Today the owner can find himself out of his property if some sharpy gets in there ahead of him and knows how to work with the courts and so on.

What do you think should be done in that regard? Mr. Ellis?

Mr. **Ellis**. I cannot speak wearing my EEI hat in this regard, but coming from the State of New Hampshire, it would be uncharacteristic of me not to say that I think the Federal Power Act doesn't do justice to the owner wherein the powers of Federal eminent domain can allow an entrepreneur who is pretty sharp to usurp the rights of a legitimate owner who may wish to develop it himself.

Senator HUMPHREY. Do you think changes should be made?

Mr. ELLIS. Yes. Personnally, I certainly would be in favor of providing private ownership and the rights that accrue to private ownership.

Mr. MATSON. But on the other hand, we have to be very sure that parochialism doesn't prevail over the good for all of the people and the development of all the natural resources.

Mr. WESTON. I agree with both the previous gentlemen. I feel strongly that as far as publicly owned facilities, the right of eminent domain is inappropriate if exercised by a licensee under the Federal aegis; second, that the right of ownership should be recognized in the Federal Power Act as having preference over all other applicants, and that the right of ownership should be recognized not just for those sites which are owned outright but those storage sites that are purchased on Federal resources by public agencies under the 1958 Water Supply Act.

Mr. MAGNUSON. I can't top those comments, but I do want to add that the State of California, speaking in our scope, has clear title to all 16 existing facilities and have experienced no problems, and that is all I need to add.

Mr. FREY. One of the things I said earlier was if the exemption is increased say from 5 to 30 megawatts or whatever it might be that is chosen, that that exemption should apply only to site owners and not to someone who comes in without title.

I think that is one protection that could be very important. With the larger sites, I think it would be helpful for FERC perhaps to make that part of the licensing procedure to deal with the issue of how to deal with protecting the rights of both the developer and the owner.

Mr. DUBROW. Senator, assuming that we have some cutoff, 25 or 30 megawatts, absent the right of eminent domain on the part of FERC's ability to convey that to the licensee, I don't think you will get these projects built. Somebody has got to have the authority to condemn the land or else you are not going to have a project.

Senator HUMPHREY. Are any members of this panel of the opinion that environmental or any other consideration would not be adequately taken into account if we restored true one-stop authority at FERC?

Mr. FREY. It is our experience in the licensing process that FERC does a very adequate job of going into these things. I think that FERC could very well take care—they certainly consult with every agency that is involved to make sure they get the information back, and it has been very extensive experience for us to find that FERC does go into these things in very much detail. It would be my opinion that FERC can do it adequately.

Senator HUMPHREY. No one would object to returning the one-stop authority to FERC?

Mr. DUBROW. I think it is almost mandatory.

Mr. ELLIS. If I may comment on that, EEI certainly feel that FERC could act as a one-stop agency very adequately because they take into consideration all of the development agency views. The thing I would like to see is to have them with the authority to resolve the conflicts that arise, sometimes almost to the cancellation of the project.

Mr. **WESTON**. Let me offer a caution. Congress when it adopted the Delaware and Susquehanna compact also assigned a responsibility to those agencies to balance the total water picture with the Federal Government having equal voice with the Governors of the States.

We have found that in a number of cases where Congress told a Federal agency, including FERC, to be consistent with the comprehensive plans of those two basins, FERC has taken the comments of those two basin commissions, including the Federal member, as merely a comment, one which they could discard in making a decision on hydropower development which might interfere with other operations in the basin.

I believe that most of the time FERC does a fairly good job in reviewing environmental issues, but not all the time, and there is a question of balancing comprehensive water resource management versus hydroelectric regulation.

Senator **HUMPHREY**. By one stop I mean at the Federal level; I don't mean to imply we would remove the States out of their rightful authority.

Mr. **MAGNUSON**. I was just going to add that California is doing all it can to promote small hydro. I look forward to sharing with you next week the Governor's policy statement and also our findings on environmental considerations.

If in fact these environmental considerations can be met at the State level, I don't see where the FERC process cannot be decreased.

Senator **HUMPHREY**. Mr. Ellis, one last question. From the point of view of a utility and representing industry today, what experience has the P.S. & H. had with microhydro sites? Are you buying power from any within the State of New Hampshire at this time?

Mr. **ELLIS**. Yes. We have contracts with somewhere between a dozen and a dozen and a half small hydro producers in the State of New Hampshire. We are actively negotiating with about 100 more right now with contracts at various states of development, both short-term, open-ended contracts based on PURPA pricing, and long-term contracts based on new contracting policy that the company has developed with small power producers.

We have the whole myriad of types and varieties of producers, from those who are investors to those who are tinkerers, all the gamut, generally all in the under 23-megawatt size. There are some larger ones that are looming on the horizon now.

Senator **HUMPHREY**. From your point of view and the industry's point of view, would a complete exemption from Federal licensing be appropriate for facilities of micro size, however that is defined?

Mr. **ELLIS**. Very small sites, I can conceive that the States could very adequately protect the public interest and not burden the Federal agency with the responsibilities.

Senator **HUMPHREY**. Very well. Thank you, gentlemen.

[Subsequent to the hearing Mr. Dubrow submitted the following:]

NRECA NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
1800 Massachusetts Avenue, N.W.
Washington, D.C. 20036/202-857-9500

October 22, 1981

Honorable Gordon J. Humphrey
Chairman, Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington, D. C. 20510

Honorable Frank H. Murkowski
Chairman, Subcommittee on Water and Power
Committee on Energy and Natural Resources
United States Senate
Washington, D. C. 20510

Gentlemen:

The purpose of this letter is to correct the answer to Senator Humphrey's question regarding the exemption from the Federal Energy Regulatory Commission's (FERC) licensing requirements for hydro projects up to 25 or 30 MW in size. Mr. Matson and I have discussed this matter and our answer to this question is as follows.

NRECA is of the view that FERC should retain jurisdiction for the issuance of preliminary permits and licenses. However, we strongly recommend that FERC simplify and shortcut its procedures and time schedules for the purpose of accelerating the issuance of permits and licenses of hydroelectric projects. As was indicated in NRECA's written statement, this may require amendments to the Federal Power Act as was recommended by the Commission in response to a request from Congressman Tom Bevill, Chairman of the Subcommittee on Energy and Water Development of the House Committee on Appropriations.

We respectfully request that this letter be made a part of the record of the hearings.

Sincerely yours,

Morgan D. Dubrow

Morgan D. Dubrow
Senior Staff Engineer
Energy and Environmental
Policy Department

Senator HUMPHREY. Since we are today focusing on how to speed up the Federal Government, we are going to have all remaining witnesses comprise the next panel.

Peter Brown I know, from New Hampshire, the Franklin Pierce Energy Law Institute; Bill Wilson from the same fine organization.

Dr. MARKER. I am Gordon Marker, president of the National Alliance for Hydroelectric Energy, and also a hydro developer.

Mr. ROSHOLT. My name is John Rosholt. I am here representing the National Water Resources Association.

Mr. BAIRD. My name is John Baird. I am here representing the Columbia Basin Irrigation District in the State of Washington.

Ms. GOULD. I am Joyce Gould. I represent the Sunnyside Irrigation District, and I am director.

Mr. BORONKAY. Carl Boronkay, general counsel for the Metropolitan Water District of Southern California.

Mr. RICHARDSON. Alan Richardson with the American Public Power Association.

Mr. FERGUSON. I am John Ferguson, legislative counsel for Georgia Pacific Corp., and I am here today on behalf of the American Paper Institute.

Mr. MCCARTY. Robert L. McCarty representing the Colorado River Water Conservation District.

Senator HUMPHREY. Fine. Thank you. I certainly intend no disrespect in asking you all to join in this panel. We will try to be as accommodating as possible and give everyone a chance to be heard, to begin with an opening statement.

Again, starting to my left, Peter Brown and Bill Wilson from the Franklin Pierce Energy Law Institute.

STATEMENT OF PETER W. BROWN, DIRECTOR, ENERGY LAW INSTITUTE, FRANKLIN PIERCE LAW CENTER, ACCOMPANIED BY WILLIAM H. WILSON, SENIOR RESEARCH FELLOW

Mr. BROWN. Thank you, Senator. It is a pleasure to be here. I appreciate the courtesy that the Senator has shown us in being allowed to air our views.

We have a full prepared text of testimony which at this point I would like to have included in the record. A summary of the testimony is as follows. The testimony in the prepared statement contains background information concerning the Federal Energy Regulatory Commission licensing process, and identifies the problems involved in this procedure.

The most important part of that statement, however, are the recommendations. These recommendations bear on two principal aspects of hydroelectric licensing—who gets the right to develop the site, and what processes should be employed in mitigating the environmental impact of site development.

Mr. Wilson and myself are of the view that the processes whereby rights to develop a site and environmental mitigation are determined are in much need of reform. At the outset, to meet any regulatory requirement, whether our recommendations are adopted or not, additional staff is needed within the Federal Energy Regulatory Commission, and coordinated with Federal agencies, most certainly the Fish and Wildlife Service, to process hydroelectric license applications.

As noted in the recommendations, a good portion of the cost of these additional agency resources can be defrayed by the assessment of permit applications, permit license applications, and exemption application fees. Permit, license and exemption applicants are users of the regulatory system and accordingly should bear the cost of regulation. Having said this, the process should be made more rational and less costly for those who pay for it.

With respect to recommendations concerning the process of determining who gets the development rights, far-reaching changes are proposed by us. As set forth in the recommendations, FERC should not be involved at all in the decision as to who gets the right to develop sites owned by non-Federal entities. Rather this determination should be left to private negotiations, state property law, and State eminent domain law.

A watered-down variant of this recommendation would take FERC out of the process of determining who gets the rights to develop nonfederally owned sites which are located at the existing dams and have a capacity of less than 25 megawatts. This latter recommendation and its variant would cover the large majority of the applications presently pending before FERC.

As an alternative to the recommendation, it is urged that non-Federal site owners be given a preference to develop their own sites. With respect to federally owned sites, the recommendations urged that FERC determine who gets the right to develop the site but be given the requisite authority to determine dam user fees and issue land use permits.

Hydropower expansion at Corps of Engineer and Bureau of Reclamation sites should be undertaken by the corps and Bureau under expedited processes and broad authorizations of Congress. Sites located on Indian reservations and tribal lands should not be developed unless the tribe agrees to or decides to undertake the development on their own.

With respect to the environmental review by FERC and State and Federal agencies, the recommendations urged that FERC be established as a true lead agency which controls the process. This recommendation means that no coordinated Federal agency or State agency is independently authorized to issue separate permits.

As an alternative to this recommendation, it is urged that FERC delegate environmental review functions to States which meet certain standards of expertise, resources, and expedited processes. This recommendation also subsumes that if such authority is delegated, that State agencies to which the authority is delegated have the power to override coordinate Federal agencies.

There are a number of specific recommendations which urge that the cost of fish passage at existing sites be shared by the developer and the public at large, and that minimum streamflow requirements be tailored to the specific site.

Thank you.

[The prepared statement of Mr. Brown follows:]

STATEMENT OF PETER W. BROWN, DIRECTOR, ENERGY LAW INSTITUTE, FRANKLIN PIERCE LAW CENTER

HYDROELECTRIC LICENSING IN THE UNITED STATES

The Energy Law Institute (ELI) of the Franklin Pierce Law Center has been engaged in a number of studies of the problems confronting hydroelectric development in the United States over the past four years. Peter W. Brown, Director of ELI and Professor of Law at the Law Center, has been principal investigator for several studies sponsored by the Department of Energy, The Corps of Engineers and the Governor's Council on Energy of the State of New Hampshire on hydroelectric development. William H. Wilson, is an attorney and Senior Research Fellow at ELI. He has been actively engaged in case studies of various hydroelectric projects throughout the United States, is currently engaged in a program to provide assistance to some twenty state legislatures on development of hydroelectric power in these states, has studied and written on the financial and tax problems confronting hydroelectric development and has assisted the Water Resources Board and the Governor's Council on Energy of the State of New Hampshire with respect to the development of hydroelectric power at state owned dams. A list of publications of ELI are attached to this Statement. Copies of these publications may be obtained either through the National Technical Information Service (NTIS) where NTIS numbers are indicated or directly from ELI.

I. ORGANIZATION OF THE STATEMENT

Although the problems of licensing are many faceted, for convenience this testimony is divided into two main parts. The first part will discuss the problems of hydroelectric licensing at sites owned or under the control of a variety of entities; private individuals, corporations, municipalities, electric utilities etc. The second part will discuss the problems of hydroelectric licensing at federally owned sites. These sites are dams, locks or other impoundment structures which are owned by the federal government and, for the most part, under the operation or control of the Army Corps of Engineers or the Bureau of Reclamation and sites, on which there are no impoundment structures, but which are located on federal lands including Indian reservations and tribal lands.

Within these two parts, two main issues will be addressed. The first issue is the issue of what agency or regulatory scheme determines "who gets" the rights to develop the site. The second issue is what is the appropriate regulatory scheme to identify and mitigate, to the extent necessary and possible, the environmental impacts of hydroelectric development. Under the existing regulatory regime, primarily imposed by Part I of the Federal Power Act, the Federal Energy Regulatory Commission (FERC) performs both the function of determining, among any number of non-federal developers, "who gets" the rights to develop the site and the function of reviewing and ordering mitigation of the environmental impacts of the sites.

The format of the Statement consists of a brief overview of the present regulatory scheme applicable to non-federal and federal sites, an identification of problems created or encountered by the regulatory regime, and a series of recommendations, to deal with the problems.

II. THE ALLOCATION OF THE RIGHT TO DEVELOP NON-FEDERAL SITES

A. A Brief Description of the Regulatory Scheme Which Determines Who Gets the Rights to Develop the Site

The jurisdiction of FERC over non-federal hydroelectric development in the United States is pervasive. Under the provisions of Part I of the Federal Power Act (16 U.S.C. § 791-823 [1976]) and its judicial interpretation, FERC has jurisdiction over four categories of projects: (1) projects located on navigable waterways; (2) projects affecting interstate commerce; (3) projects which utilize federal land; and (4) projects which utilize surplus water from government dams. See 16 U.S.C. §§ 796, 797(a), and 817. In FPC v. Union Electric Co., 391 U.S. 90 reh. denied, 381 U.S. 956 (1965) (the "Tom Sauk" case) the Supreme Court held that a hydroelectric project affected interstate commerce if it was connected to an interstate electric utility grid and the courts have similarly expansively construed the term "navigable waterway" to include waterways which, at any time in the past, have been used for transportation or flotation of logs. See Connecticut Light and Power Co. v. FPC, 557 F.2d 394 (1st Cir. 1977). Given that, with the exception of parts of Texas, the States of Alaska and Hawaii and the Commonwealth of Puerto Rico, the electric utility grid in the United States is interconnected, it is readily apparent that almost all hydroelectric projects located within the United States fall under FERC jurisdiction.

Having established FERC jurisdiction, the Federal Power Act requires FERC to determine who gets the rights to develop the site. Over the past sixty-one years an elaborate mechanism has been established by the statute and FERC regulations whereby FERC makes that determination. There are several critical features to this mechanism. First, FERC may award the rights to develop a site (i.e. issue a license) to an entity which owns no property or has no interest in property at the site. Second, that determination. There are several critical features of this mechanism. First, FERC may award the rights to develop a site (i.e., issue a license) to an entity which owns no property or has no interest in property at the site. Second, municipalities and states will be given a preference to the site among competing license applicants whose plans to develop are not better than those of the municipal applicant. (16 U.S.C. 800(a) [1976]). Third, among competing private developers or among competing municipal developers FERC must award the license to the applicant whose plans are best suited to the "comprehensive development of the waterway." (16 U.S.C. § 803(a) [1976]). Four, licenses issued by FERC carry a maximum term of fifty years, and upon expiration of the license, FERC may issue a license on the site to an operator other than the original licensee. (16 U.S.C. § 799 [1976]).

There are also three main categories of approvals which FERC may issue in determining who gets the rights to develop the site. These approvals are a preliminary permit, a license or an exemption. Licenses are further divided into licenses for minor projects (projects less than 1.5 MWs), licenses for major projects at existing dams (projects in excess of 1.5 MWs at existing dams) and major projects (projects in excess of 1.5 MWs at which there are no existing impoundments). A preliminary permit enables a potential developer to study a site and, if the developer files a license application within the preliminary permit period, the developer becomes a priority applicant for the license. A license is a permission to construct and operate the project for a period not to exceed fifty years. An exemption permits an applicant to develop and operate the site for indefinite period and, as the name implies, exempts the developer from a number of provisions of the Federal Power Act. There are presently two types of exemptions, the 5 MW exemption for existing sites (Energy Security Act, § 408 [1980]) and the 15 MW conduit hydro exemption (16 U.S.C.A. § 824 [1978]).

B. The Problems with the Present System and Attempts at Reform

The problems created by the elaborate mechanism to award rights to a site are several fold. The system substantially displaces state property law by giving licensees the power to condemn property in order to develop the site. 16 U.S.C. § 814 (1976). However, while there is some dispute on the issue, the system does not seem to permit FERC to authorize licensees to condemn water rights established by state water law and regulation. 16 U.S.C. § 821 (1976).

The system invites competing applications which causes delay in development. The system pits non-site owners against site owners, municipalities against private developers and private developers against state or municipal site owners.

The standards used by FERC in resolving these conflicts tend either to be harsh and arbitrary or exceedingly vague. A site owner could lose a site to a private developer who is "first in time" in filing a license application. On the other hand if a developer files an application which is first is time and a municipality files a subsequent license application, the municipality will get the site if its plans are equally suited to the "comprehensive development of the waterway." Under this latter test, it is not at all clear what factors FERC will use to determine whether the application is equally suited for comprehensive development. For example what choice does FERC make if the first in time applicant proposes a 5 MW installation but the municipality proposes a 6 MW installation and the latter proposal involves increased dam height and reservoir flooding with attendant and very serious environmental impacts.

Recently, with the exploding case load of FERC, there has been an increase in competing license and permit applications. FERC staff indicated pending license and permit applications as of December, 1980 of 877 compared to 49 in 1978 and estimates an increase to 1,300 filings in 1981. If the strain on FERC resources were not enough caused by the massive number of non-competing filings, the competing filings require considerably more staff resources and ultimately a resolution by the full commission sitting *en banc*. In recent discussions with FERC staff there were estimated to be some 300 to 350 projects which were the subject of competing applications in one form or another.

The system has also given rise to that bizarre creature known as the "hybrid" application. The "hybrid" application is an application by a municipal entity and a private developer for a permit or a license. The application may be a legitimate joint venture between a municipality and a developer in which the municipality controls the project, owns the necessary property, interests and is merely seeking the assistance of a developer with hydroelectric expertise. On the other hand, it may be a sham, in which a private developer is merely using the name of the municipality to obtain the municipal preference and the private developer is in total control of the project. There is evidence that the sham arrangement is being used where municipalities in one state are filing applications on sites in another state. See the City of Fayetteville Public Works Commission, Project No. 3137, September 29, 1981.

The system, moreover, was not designed to deal with the present problems which were unforeseen at the time of the enactment of the Federal Power Act in 1920. Undoubtedly there was legitimate concern in 1920 with the ability of the investor owned electric utility industry to dominate access to sources of electric generation. See Pinchot, The Long Struggle for Effective Federal Water Power Legislation, 13 Geo. Wash. L. Rev. 2 (1945). Presently, the hydroelectric industry, at least that part of the industry which is engaged in small scale developments, consists of a number of entrepreneurs, with no single company dominanting the industry.

In the face of these problems and given the tools with which it must shape policy, FERC and its staff have struggled mightily to develop a rational system. FERC has delegated more authority to staff to handle routine matters, has attempted to reduce the potential for competing applications by giving site owners a "qualified preference" for 5 MW exemption applications and has begun to address carefully and thoughtfully the "hybrid" application problem in the City of Fayetteville case, supra. However, to avoid unncessary delay in hydroelectric development, serious strains on FERC resources and further distortions of the system occasioned by developers seeking to take advantage of the application process, more far reaching reforms must be attempted and more adequate tools must be provided to FERC.

C. Recommendations

1. The Provisions of the Federal Power Act Requiring FERC to Choose Who Gets the Development Rights Should Be Repealed and The Decision Left To The Standards of State Property Law and Private Negotiation

The provisions of the Federal Power Act which require FERC to choose, among competing developers, who gets the development rights to the site should be repealed. This recommendation would require an Act of Congress. Under this recommendation FERC would retain its authority to review, subject to the further recommendations in Part II of this Statement, the environmental aspects of development. Those persons who acquired by purchase or through state eminent domain legislation the necessary property interests to develop the project would be "chosen" as the developers. This regime pertains to all other forms of power generation and would be appropriate for hydroelectric generation in light of the problems outlined above.

A variant of this recommendation would be to repeal those provisions of the Federal Power Act which require FERC to choose the developer with respect to hydroelectric projects of 25 MWs or less at existing sites. Under this legislation, again FERC would retain its environmental review functions for this category of sites but state law on property rights and eminent domain and voluntary agreements among parties would "choose" who develops a particular site. Since the bulk of FERC filings fall within the 25 MW size limitation, this recommendation would have the advantage of stemming the drain on FERC resources and providing Congress and FERC with simultaneous experiences under the new system and the old system which would pertain to new sites and sites at which there was existing dam of in excess of 25 MWs of capacity.

The problems with the main recommendation and its variant are that a decision would have to be made concerning the disposition of presently pending permit and license applications and the "municipal" preference would be eliminated. With respect to pending applications for preliminary permits, it would seem appropriate for Congress to state in the legislation that all pending preliminary permits as of a specific date would be dismissed. Permits issued, license applications filed and licenses issued as of that date would continue to be handled by FERC. Presumably, projects on which there are issued permits and licenses and pending applications for licenses are those projects for which considerable amounts of time and resources have been expended.

With respect to the municipal preference, the preference as administered by FERC would obviously be eliminated. However, municipalities and especially state development agencies have access to state eminent domain law should they choose to embark on aggressive hydroelectric development programs. If they are unable to obtain the advantages of proceeding by way of condemnation through their own state law, the state presumably has decided that the municipalities should not be engaging in this activity to the extent that such activity is encouraged by expansive eminent domain powers. Such a judgment by a state cannot and probably should not be questioned by any federal authority.

2. The Provisions of the Federal Power Act Should be Amended to Permit FERC to Grant an "Owners Preference" to Developers

This recommendation is an alternative to the first recommendation or its variant. It is second in order of preference. Under this recommendation Congress would have to enact legislation which would require FERC to grant a license or permit to an owner of a site unless a competing developer demonstrated that its plan for development would be substantially better than the owner's plan for development. The legislation would have to specify that the non-owner's plan, in order to be substantially better, would have to provide significantly increased capacity and energy, would have to create significantly less environmental impacts and would have to provide significantly more recreational benefits than the owner's plan.

The difficulties here would be the definition of who would qualify as an "owner" of a site. Is it someone who owned the water rights? The water rights and the impoundment, etc? Again there would be the problem of how to dispose of pending filings. It is suggested that the solution to this problem be the same as the solution suggested under Recommendation 1. The municipal preference issue would also arise under this recommendation. However, under this recommendation, the municipality still has a shot at ousting the owner; admittedly a long one, however. The municipality also has an opportunity to develop if the owner chooses not to. Presumably if an owner had no plan (i.e. chose not to develop) any plan submitted by the municipality would be "substantially" better. Moreover, if a municipality which owned a site chose to develop it jointly with a non-municipal developer, the municipality itself would have the advantage of the owner's preference and hence would not have to be concerned with the question of whether its application was a "hybrid" or legitimately qualified for the municipal preference.

3. The 5 MW Exemption for Existing Sites Should be Expanded to 25 MW at Existing Sites and FERC Clearly Authorized to Issue an Exemption to a Site Owner in the Face of a Previously Filed License Application

Under the provisions of the Energy Security Act of 1980 (§ 408), FERC has promulgated regulations providing for case by case exemptions from various provisions of the Federal Power Act of projects at sites of 5 MW's or less. As the regulations presently read a person with the requisite property interest to develop the site may seek from FERC an exemption from licensing and other requirements of the Act. If FERC does not act upon a properly filed application for an exemption within 180 days it is deemed to have been granted. The advantages of the exemption regulations are that the process is simple, inexpensive and quick and gives somewhat of an advantage to site owners over other potential developers. The disadvantages of the 5 MW exemption are its limitation to projects of 5 MWs or less, certain of its environmental requirements and the fact that an owner's exemption application will not take precedence over a previously filed license application.

This recommendation would require Congress to expand the 5 MW exemption to sites of 25 MW's or less at existing sites by an additional amendment to the Federal Power Act. The additional amendment should, however, expressly direct FERC to issue an exemption to a site owner up until a license is actually issued to another developer and should expressly state that an exemption application takes precedence over any application filed by any other person, state etc. As will be discussed further below the exemption statute should also not require FERC to condition an exemption based on the recommendations made by the Fish and

Wildlife Service and state fish and game agencies.

III. REGULATING THE ENVIRONMENTAL IMPACTS OF NON-FEDERAL HYDROELECTRIC DEVELOPMENT

A. Overview of Current System

The current environmental regulation of practically all non-federal hydroelectric development is accomplished under a dual system of multiple state and federal agency review as discussed above. The focal point of this review is the federal hydroelectric licensing process administered and applied by FERC to the environmental aspects of the project.

Under this licensing process, the FERC has been held to hold exclusive jurisdiction over the licensing of all hydroelectric projects falling within its broad jurisdiction. For the purposes of environmental regulation the FERC exercises this jurisdiction by coordinating, collecting and reviewing the input of all other local, state and federal agencies which have jurisdiction over any hydroelectric project applying for a FERC permit, license or exemption and reaching a final decision on whether or not to permit the proposed development to occur, and if so, under what terms and conditions. At the federal level this input is principally provided by the Fish and Wildlife Service, the Corps of Engineers, the Advisory Council on Historic Preservation, the Environmental Protection Agency, the Bureau of Land Management and the National Forest Service. State environmental regulation input may be provided by state Departments of Natural Resources, Fish and Game Departments, Water Quality Agencies, Water Appropriation Departments, Energy Facility Siting Boards, Soil and Water Conservation Agencies, Wetlands Agencies, Dam Safety Divisions and Historical Preservation Commissions and their counterparts. Some of these entities, have independent permitting authority, like the Corps of Engineers 404 Dredge and Fill Permit, and thus provide their input to the FERC by granting or denying a permit. Others merely comment on the proposed projects by informing the FERC of desired licensing conditions or perhaps even suggesting that the FERC bar the proposed development. In either case, the FERC has the authority to operate as a lead agency and render the final decision on the proposed project development.

The level of environmental scrutiny accorded a project by the FERC will vary according to the type of action requested by the applicant, the size of the proposed project and whether a new impoundment structure must be built. This level of scrutiny has evolved into licensing categories established through a combination of statute and regulation which appropriately provide for the least scrutiny where the probability of environmental intrusion is the smallest and the greatest scrutiny where environmental dangers are highest. Thus from the FERC's perspective, an application for a preliminary permit, which only provides for an exclusive right to study the site for development, is generally accorded minimum environmental review and seldom denied. Conversely, an application to develop a project of 1.5 MWs or more with a new impoundment structure falls within the class subject to the most critical review and will almost surely require an environmental impact statement.

Despite the fact that the system for regulating the environmental impacts of hydroelectric development through the FERC licensing process was designed for a period far different than that created by the recent flood of hydroelectric project applications, the system's response to this challenge has revealed a number of its strengths for such a purpose, particularly as modified by FERC and Congressional action. One of the principal strengths of the current system is its provision of a single lead agency with relevant expertise, the FERC, to coordinate the input of all parties interested in a hydroelectric project and reach a final decision based upon its evaluation of that input. This FERC lead agency approach has the potential to be a particularly valuable mechanism for dealing with interstate impacts, and resolving conflicts between parallel state agencies, state and federal agencies and developers and these agencies. The authority of the FERC as a federal decision maker enables it to encourage negotiation and compromise between the various conflicting parties. The mandate of the FERC to consider the comprehensive development of the waterways and its expertise in power production give it a unique ability to balance power and environmental objectives, particularly with respect to the projects in the majority of states which have no regulatory body with the authority or expertise to make informed judgments about the power value of a project.

Finally, it should be noted that the FERC hydroelectric project licensing process has been substantially improved in the last few years by a combination of Commission and Congressional action. For example, the FERC has reduced license information and processing time for projects under 1.5 MWs (18 C.F.R. § 131.6 [1979]) and projects 1.5 MWs and above at existing dams (44 Fed. Reg. 67,644 [1979] to be codified in 18 C.F.R. §§ 4.50 *et seq.*) Similarly certain projects under 5 MW are eligible for an even more rapid processing under the 5 MWs case by case exemption (45 Fed. Reg. 58.368 [1980]) and conduit projects under 15 MWs are exempt from Part I of the Federal Power Act (45 Fed. 28,080 [1980]). The FERC has also reduced processing time and simplified application procedures by delegating the authority to issue uncontested permits and licenses to its staff (44 Fed. Reg. 46,450 [1979]) and prescribing general license and permit filing requirements and evaluation procedures.

B. Problems With the Current System and Attempted Reforms

Despite the merits of the original system and the improvements recently accomplished, the tenfold increase in permit applications and the similar and expected increases in license and exemption applications have exposed a number of problems within the environmental review function of the FERC licensing process. The end result of virtually all of these problems is an increase in the time and cost of project licensing and, consequently, a delay in the availability of valuable hydroelectric energy and an outright bar to some development that might otherwise be economically and environmentally feasible. While most of the problems noted are caused by or at least aggravated by the fact of this rapid increase in the number of FERC applications, they all are susceptible to improvement through some combination of agency action, federal legislation or congressional oversight.

Some of the major problems associated with the current system relate directly to the FERC's role as the lead agency in hydroelectric licensing. From the perspective of some state environmental agencies, the dual federal-state licensing system is cumbersome, duplicative and likely to undervalue state requirements, particularly when the state recommendation is against development. Thus some state agencies regard the FERC as pro-development and take extreme or highly polorized positions in the licensing process to counterbalance this perceived bias. Unfortunately, this is frequently characterized by unnecessary and automatic license and permit interventions, attempts to demand conditions involving subjects outside the agency's jurisdiction, refusals to provide developers with necessary information or assistance, and instances of "hard line", usually restrictive conditions on project development accompanied by a disinclination to bargain in good faith.

This problem is also present, in a more accute form at the federal level. In particular, despite the recent decision in Monongahela Power Co. v. Alexander, Civil Action No. 78-1712, Dist. Ct., D.C., December 19, 1980, the Army Corps of Engineers disputes the FERC's ability to override its decision on a § 404 (dredge and fill) permit. This situation can be particularly troublesome to developers where, as in several recent cases, the Corps conducts separate § 404 permit proceedings complete with a full consideration of the same issues decided under the FERC process. In fact, some agencies may actually bring new and different demands to this Corps proceeding, despite their full participation in the FERC process. Other federal agencies such as the Fish and Wildlife Service, the Environmental Protection and the Bureau of Land Management and the Advisory Council on Historic Preservation have also disputed FERC's ability to override various aspects of their statutory authority or shape the form of their input in the licensing process.

From the perspective of many developers, the current FERC process is too deferential to other state and federal agencies. They cite multiple examples of the FERC's reluctance to override another agency's requirement or reach a final decision in cases where agency positions conflict. Developers have also expressed concern about FERC's failure to accelerate an outside agency's review of a license applicant's filing. Developers also perceive that the FERC is too distant from the majority of sites and that the applications are processed by persons with insufficient understanding of and sensitivity to state and regional conditions. Many state agencies hold this feeling to an even greater degree.

One other problem with the current licensing system is the requirement that all contested applications be decided by the full Commission. Since any formal intervention, even for informational purposes, causes an application to be considered contested, the effect of this requirement is to force a larger number of cases onto the commission schedule which results in further licensing delays for all projects.

Most of the problems described here apply in varying degrees to permits, licenses and exemptions. However, the current 5 MW exemption has some deficiencies which should be separately noted. In particular, the developer must accede to any federal or state fish and wildlife requirements attached to the application for exemption or submitted in response to the notice of exemption application. This requirement which is based on Section 408 of the Energy Security Act prevents the Commission from exercising its usual role as final arbiter of conditions on project development and operation and undoubtedly serves to discourage the use of the exemption.

Up to this point the problems attributed to FERC hydroelectric licensing have been largely procedural in nature although certainly any of them have the potential for resulting in the inability to develop a particular site and generally to increase the probability that some sites will not be developed. Experience with the license process has also exposed three substantive problems which operate to directly preclude development a certain site. These problems involve requirements for fish passageways, regional or standard minimum flow policies and the prohibition against all hydroelectric development on a federally designated recreational rivers.

The Federal Power Act mandates that the FERC require the installation and operation to be at the licensee's expense of such fishways as may be prescribed by the Secretary of Interior. 16 U.S.C. § 811 (1976). Under current FERC and Fish and Wildlife practices, this means that the FERC will order a licensee to construct such fishways as may be recommended by the Fish and Wildlife agencies. Fish and Wildlife will also recommend the installation of fishways whenever a state fish and game agency requests. The recommendation for fishways is usually applied with equal force for new and existing dams. Given the high capital costs of fishways for most dams, the fact that Fish and Wildlife must approve the design of any fishway and the fact that the costs are assessed entirely against the project developer, the net effect of this requirement will be to preclude development in certain instances. This result translates into no fishways and no power.

Another Fish and Wildlife Service position which may frustrate hydroelectric development concerns the prospect for regional instream flow policies. From a Fish and Wildlife Service perspective, the purpose of a minimum stream flow requirement is to protect aquatic biota from damage stemming from inadquate water flows from the impoundment structure. While certainly this policy purpose is meritorious, the fact is that the impacts of different minimum flows on various aquatic biota are highly controversial, largely misunderstood and generally very site specific. The Fish and Wildlife Service trend toward regional policies is an understandable agency response to insufficient staff resources to undertake studies to determine more precise case by case minimum requirements. The trend seems to be the imposition of conservative regional minimum stream flow requirements which place the expensive and near impossible burden of justifying a lesser flow on project developers.

Under the Wild and Scenic Rivers Act, 16 U.S.C. § 1271 *et seq.* (1976), rivers may be designated wild, scenic or recreational depending on the degree of development of the river. Recreational rivers may have existing dams located on them but under current FERC policy the retrofitting of an existing dam on such a river cannot be licensed, even if it can be shown that the development and operation of the project would not disturb the qualities of the river which lead to its designation. This would seem to amount to an arbitrary abandonment of the power potential of some of these sites.

C. Recommendations

The problems identified above could be resolved through a variety of single and composite solutions. Each recommendation presented here may address one or more of the problems raised. In addition, each recommendation may contain one or more subordinate recommendations which could be adopted, independent of the adoption of the major recommendations. The recommendations are presented to correspond with the order of the problems and where multiple options are noted, set forth in order of priority.

1.(a) The FERC Should Be Clearly Established As The Lead Agency and Final Decision Maker Regarding All Aspects of Hydroelectric Development

Under this proposal the Federal Power Act would be amended to establish clearly and expressly the FERC as the agency responsible for all licensing decisions on hydroelectric projects subject to its jurisdiction. All other federal and state agencies would recommend action in the form of comments on the proposed development and would be precluded from issuing seperate or independent project approval. The FERC would have to consider fully all input and reach its decision on the basis of the information provided by the parties. Care would have to be taken to insure that the FERC did, of course, reach final decisions, even in disputed cases, as soon as possible. The comments would have to be timely presented under a schedule developed to represent the potential environmental impact differences between different types of proposed developments. For example the time period for comments would be relatively short for projects at existing dams below certain size (e.g. 5 MW), run of the river projects at existing dams below a certain size (e.g. 30 MW), peaking projects at existing dams below a certain size and new dams with run of river operations of smaller size. Once the schedules were final any agency, which failed to meet the schedule appropriate for the project being reviewed or which obtained an extension of time from FERC, would be considered to have waived all requirements and excluded from further participation in the licensing process.

The main thrust and primary advantage of this option is to provide the FERC with the clear ability to discharge the role contemplated for it under Part I of the Federal Power Act and to centralize the decisions on hydropower licensing in a single agency with recognized expertise in the relevant subject matter. This would provide significant savings in licensing time and costs to project developers. It also gives the FERC the means of controlling the process (and hence responsibility for dealing with delays etc.) for which it is already considered to be responsible.

While this recommendation implies a significant increase in the commission workload and some potential for state resentment, these problems could be mitigated in a number of ways. First, the increased costs of FERC administration could easily be recovered through authorizing the FERC to assess application fees generally proportional to project size and/or increasing annual assessments. Second, the staff could be authorized to issue all permit, license and exemption decision, subject to appeal to the Commission. Finally, and perhaps most importantly, the major part of FERC staff licensing review could be accomplished at the regional level, providing for more direct and frequent contact between FERC staff and state agency personnel and developers.

1.(b) The FERC Hydropower Licensing Function Could Be Delegated To State Agencies Which Elected To Accept the Responsibility and Met Program Criteria Established by the FERC.

This option would provide that the FERC function as the lead agency for the environmental review of hydroelectric projects be delegated to agencies which requested the delegation and met FERC qualifications. The delegation could be for all sites or reserved for sites up to some maximum size (e.g. 25 MW). Once certified, the state agencies would have the same clear exclusive authority as the FERC would enjoy under option 1.(a). Thus, the state agency would have the power and duty to restrict other state agency and federal agency input to comments provided within prescribed deadlines, and would be the only forum for environmental review and authorization or rejection of the project, subject to judicial review wihtin the state. The FERC would establish clear and complete standards for state programs and would have to be prepared to decertify states which failed to comply with those standards. In addition, parties dissatisfied with a state licensing order could be given the right of appeal to the FERC.

This recommendation offers the principal advantage of decentralizing the hydropower licensing process and conferring final decision making authority on an agency more directly familiar with local conditions bearing on the development. Since it would be optional, it would not impose unwanted burdens on the states. State costs of administration could be partially borne by shifting application, licensing and annual assessment monies to the certified agencies in proportion to their workloads.

The major problems with this recommendation relate to considerations of federalism, lack of expertise and FERC administration. First, few states currently have a single agency with the authority and experience to undertake the licensing responsibilities of the FERC in their state. In particular, few state agencies have experience in balancing the power, navigation, flood control and environmental impacts of a proposed development. Most states would seem likely to have some difficulty identifying the appropriate agency to carry such responsibilities and federal agencies might be expected to be particularly hostile to becoming subordinate to a final decision by such an agency. State agency control over projects with interstate impacts would, of course, be particularly difficult.

If the FERC certification standards prove to be rigid or detailed, few states would attempt to qualify. If the standards were too flexible or vague the certification process would accomplish little. In either case, to the extent FERC was required to exercise oversight over the states, it might well find itself with more burdensome and difficult responsibilities than if it were operating as the exclusive lead agency. Finally, with a few exceptions, this system could not be established overnight and by the time a significant number of states were ready to assume FERC functions the peak in proejct license applications would have passed in many states.

1.(c) The FERC Could Be Authorized To Exempt Larger Projects At Existing Dams From All Are Part Of the Requirements of Part I of the Federal Power Act

In lieu of or in addition to one or both of the recommendations discussed above, the FERC could be given the authority to exempt existing dam projects of 15, 20, 25 MW or more from some or all licensing requirements. In effect, such authority would amount to a explicit congressional directive to the FERC to continue its efforts to tailor the license requirements to the size and potential environmental intrusiveness of various types of hydropower projects. To be completely useful, any such exemption authorization should be free from the mandatory Fish and Wildlife conditions constraining the current 5 MW exemption. The environmentalists legitimate concerns of any such expanded exemption would be allayed by restricting the exemption to a case by case process.

The major value of such an exemption expansion would derive if the FERC used the authority, as it did to the limits of its authorization for the 5 MW case by case exemption, as a mandate to further refine and streamline the current environmental review system. The utility of such an exemption would obviously be greatest if the FERC were, concurrently, established as the lead hydropower agency discussed in recommendation 1.(a) above.

2. The Current 5 MW Exemption Authorized Under the Energy Security Act Should Be Amended To Permit The FERC To Make The Final Exemption On All Exemption Conditions.

In the event there is no increase in the maximum size of FERC license exemption size of FERC license exemption and accompanying improvement in the form of the exemption as discussed in recommendation 1.(c) above, then the current exemption should be modified to authorize the FERC to decide all exemption conditions, including those affecting fish and wildlife. The possible legitimate concern expressed by some fish and game agencies that the time required to make an informed response to an exemption application could be addressed by expanding the time period; something the FERC would have probably done on its own initiative if it had been given responsibility over such conditions initially.

3. Congress Should Establish a Fair Uniform Policy for Assessing the Costs of Fishways and Other Fish Enhancement Measures Associated With Hydropower Projects

The costs of fish passages and other fish enhancement measures at hydroelectric projects should be shared by project developers and the public at large. In particular, the developer of an existing dam should only have to share the smaller fraction of the costs of such measures with the other beneficiaries of the fish enhancement measures (e.g. sportsman, state and federal taxpayers, etc.) A developer of a new dam should have to share the larger share, but not necessarily the full cost of such devices. Such cost sharing would seem appropriate in light of the dual national policy objectives of anadromous fish restoration and fostering of renewable energy production. The difficult part would be to work out an appropriate cost sharing formula and shift part of the cost of aquatic biota protection, a public benefit, to the public at large.

4. The FERC Should Be Authorized To Grant Licenses For the Retrofitting Of Existing Dams on Recreational Rivers Where Such Development Could Proceed Without Interfering the Qualities of the River Which Caused its Designation.

The purpose of this recommendation is to enlarge the number of potential hydropower sites without interfering with the mandate of the Wild and Scenic River Act. The installation of turbines at an existing dam particularly one that had formerly been used for electric generation, would seem to pose little threat to the recreational nature of such rivers. If a project could be feasibly operated in a run of the river or similarly unobtrusive manner, there would seem to be little objection to developing the power potential of such sites.

5. The Fish and Wildlife Service Should Be Discouraged From Establishing Rigid Regional Minimum Flow Requirements and Provided with Sufficient Funding to Assess Appropriate Instream Flow Requirements.

Hydropower project feasibility is extremely sensitive to minimum flow requirements. The setting of minimum flow requirements on a site specific basis, unencumbered by overly conservative generic minimum flow policies, will help insure that the appropriate balance is struck between the optimal power development of sites and the actual flow regimes appropriate for the protection of the aquatic biota and other needs in a particular location. This recommendation would also shift part of the cost of aquatic biota protection, a public benefit, to the public at large.

IV. DEVELOPMENT AT FEDERALLY OWNED SITES

This section of the Statement will discuss the problems of and make recommendations concerning the development of hydroelectric power at federally owned sites. As with non-federal sites the two main categories of issues are (1) the choice of who gets to develop the site and (2) environmental regulation of development.

With respect to the latter category of issues, environmental regulation, the problems are virtually identical for non-federal development at federally owned sites to development at non-federally owned sites. Accordingly, discussion in this section will deal only with the choice of who gets to develop the federally owned site. The recommendations on environmental regulation made in Part III supra., will for the most part hold for this section.

A. An Overview of the Development Process at Federally Owned Sites

There are some 400 sites at which there are existing impoundments presently owned by the Federal Government and controlled or operated by the Corps of Engineers or the Bureau of Reclamation (BUREC) and additional, much smaller number of impoundments, under the control of the Soil Conservation Service and the Tennessee Valley Authority. There is active interest among non-federal developers in these sites. Recent FERC data indicates there are in excess of 500 filings on sites owned by the Federal Government, several of which filings are obviously competing.

In addition to existing impoundments, there are some 1011 sites "reserved" under the Pickett Act of 1910 for federal development. There is interest in these sites as well.

Historically, federal development of multi-purpose water projects has included, where deemed feasible, hydroelectric development by TVA, COE and BUREC. While the TVA process of hydroelectric development is somewhat different, the processes for hydroelectric development by COE and BUREC are essentially the same. The process is lengthy and complex, and given the present federal requirements, will take anywhere between eight to twelve years from the first feasibility studies to actual operation. The present process does not significantly distinguish between smaller projects which involve retrofits of hydroelectric equipment at existing impoundments and construction of new, multi-purpose dams.

Under these circumstances and given the intensely difficult problem of reforming the federal development process, the present philosophy of reducing federal expenditures and federal activity where the private sector can perform the same tasks, the premise of this section of the Statement is that non-federal development will and should occur at federally owned sites. There are two caveats in order here. First, there is a strong institutional and political bias among rural electric cooperatives and municipal electric power systems, created by existing federal law, whereby these electric systems favor non-federal development. Under the Flood Control Act of 1944 (16 U.S.C. § 825s [1976]) and related legislation these systems are "preference customers" of federally developed power and receive this power, based on a federal pricing formula, which makes this power relatively "cheap". Second, there are several sites controlled by the COE and BUREC which presently generate hydroelectric power and which, by recent estimates, can be expanded to provide an additional 2000-3000 MWs of capacity.

Given the logistical and administrative difficulties of joint operation by COE or BUREC and non-federal developers of these projects if they were expanded, it is probably desirable to authorize expansion at these sites by COE or BUREC and to expedite the federal process of development for these projects.

The process of non-federal development at federal sites involves the same permitting and licensing process by FERC discussed in this first section of this Statement. The distinctions are that the licensee does not obtain ownership interests in the site, no exemptions are available and the developer-licensee must coordinate its development not only with state and federal environmental regulatory agencies but with federal agencies which own the site or the land around the site. With respect to sites reserved under the Pickett Act of 1910 and other executive reservations the Federal Power Act bars FERC permits or licenses on these sites. 16 U.S.C. (1976). Sites located on Indian reservations are subject to the FERC licensing and permitting process as well and under the shceme of this process, are open to development by any interested developer in addition to the Indian tribe.

B. The Problems with the Present System

The present FERC system for federally owned sites involves the same problems of competing applications for non-federal sites with the important exception that the federal government is the owner of the site. An additional problem is the coordination of development with the federal operating agency at the site and land management agencies on federal lands surrounding the site.

With respect to the problems of coordination, the important issues here are which agency, FERC or the operating agency (COE or

BUREC for the most part) has the authority to levy a dam use charge or some other fee for development, what the formula should be for determining the fee or charge (see 16 U.S.C. § 803(e) [1976]) and which agency, FERC or the land management agency (Bureau of Land Management, National Forest Service, etc.) issues rights of way permits or limited use permits to provide access by developers to the sites. See generally the Federal Land Policies Management Act (FLPMA) 43 U.S.C. § 176(a) [1976] and 16 U.S.C. § 797(e) [1976]). Presently BUREC, through the Solicitor's Office of the Department of Interior claims the right to determine the formula for assessing a dam use of "falling water charge and, in some instances where storage reservoirs owned by COE confer benefits on a site, COE claims the right to assess a reservoir use charge. COE, historically, has acceded to the determination and assessment by FERC of a dam use fee for COE sites. The Bureau of Land Management of the Department of Interior (BLM) has maintained, under FLPMA, the right to retain control over "right of way" and other land use permits in the face of contrary assertions by FERC.

The existing conflicts between FERC and coordinate federal agencies with respect to non-federal development at federal sites cause delay and additional expense to developers. The competing application problems also are obstalces to development. Given the interest in non-federal development of these federal sites, federal action is needed to resolve promptly these problems. The following recommendations can be undertaken separately or together. The preference is that they be undertaken together.

C. Recommendations

1. The Present FERC Licensing System Should Be Retained but the Authority of FERC to Determine and Assess User Fees and Issue Land Use Permits Should be Clarified in Favor of FERC's Authority.

The primary attraction of this recommendation is that it does not require an Act of Congress. Its disadvantage is that it does little to resolve the problem of competing applications for federal sites.

With respect to its attractive features, both COE and BUREC, BLM and NFS presumably could be mandated by executive order to enter into memoranda of understanding whereby FERC, subject to timely and relevant comment by these executive agencies, would be given the authority to determine and assess user fees and issue rights of way permits. It is important, however, that the executive order of MOU clearly stipulate that FERC is given the authority in this area.

With respect to the disadvantageous feature of the recommendation, its failure to address the competing permit and license issue, there are two countervailing considerations. First, if Congress alleviates the competing application process per the recommendations urged in Section II of this Statement, staff resources of FERC should be adequate to deal with the competing application problems at the much more limited number of federally owned sites. Second, this recommendation preserves the municipal preference and hence does not fly in the face of customary and historic privileges of taxpayer supported entites under our federal system.

At this juncture, it may be appropriate to discuss options which, while useful to consider, are not being recommended at this time. However, should efforts fail to resolve the coordination problems between FERC and other federal agencies, these options should be seriously considered for legislative action by Congress. These options would involve either an auction of development rights at federally owned sites or a lottery whereby development rights would be dispensed to lottery winners. Both the auction and lottery system would require an Act of Congress. The auction presumably would solicit bids on sites and an award could be made by the controlling agency (COE or BUREC for the most part). Once the award were made the successful bidder would proceed subject to an environmental review process as recommended in Section III of this Statement. Existing licenses on federal sites would be honored but pending license applications, issued permits and pending permit applications would not be honored after the effective date of the legislation. The difficulties with the auction are the problem of evaluating the bids and the effective repeal of the municipal preference.

Under the lottery system, there would be an entry fee, a lottery and an award. The same treatment suggested under the auction system for pending applications and existing permits would be accorded to applicants and permitees under the lottery system. The difficulties are the problem of proxies (a problem which has arisen in the context of oil and gas leasing lotteries) and the elimination of the municipal preference.

2. BUREC and COE Should Be Authorized To Study, Construct and Operate In One Legislative Enactment Hydropower Expansion at Sites Which They Control

This recommendation calls for Congress, by a single enactment, to authorize the COE and BUREC to proceed to develop and operate hydropower expansion at existing sites. The present system of evaluating the feasibility of such expansion under Principles, Standards and Procedures would be utilized with final review of each project residing with the Secretary of the Army and the Commissioner of BUREC. Since for most sites capable of expansion, COE and BUREC are the only feasible developers, this recommendation will significantly truncate and expedite the present federal water projects authorization process in an area where there is much to ge gained (2000-3000 MW of capacity) and considerably less environmental impacts than other federal water projects. The recommendation also assures continuance of the customer preference to this expanded hydropower to municipal electric and rural electric cooperative systems.

The difficulties with this process are that it is a marked change from the customary congressional review of federal water projects and, of course, involves the outlays of substantial federal funds.

3. Indian Tribes Should Be Given Complete Control Over Hydropower Sites Located on Indian Reservations and Tribal Lands

As noted above, FERC has jurisdiction to license hydropower development on federal lands, including Indian reservations. Presumably a private developer, in the face of contrary desires of an Indian Tribe could be licensed to develop a site on tribal lands. This policy flies in the face of present Indian policy to create sovereign status and self-determination for Indian Tribes and to enable them to undertake development of their own economic, social and political future.

An Act of Congress amending Part I of the Federal Power Act removing the authority of FERC from licensing projects on Indian Reservations and expressly prohibiting state and local governments from authorizing such development would be necessary. There are no foreseeable disadvantages to this policy with the possible exception that certain sites on Indian lands would not be developed. However, under the present policy of our nation to accord Indian tribes and Native Americans self-determination, the very essence of self-determination means that Indian tribes and Native Americans are free, for whatever reason, to make that choice.

HYDROELECTRIC DEVELOPMENT REPORTS

State Reports:

DOE/RA/04934-41
ELI-80-17 EXECUTIVE SUMMARY: LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN THE SIX NEW ENGLAND STATES, January 1979 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Rev. August 1980

DOE/RA/04934-06
ELI-79-9 EXECUTIVE SUMMARY: LEGAL OBSTACLES AND INCENTIVES TO SMALL SCALE HYDROELECTRIC DEVELOPMENT IN THE MID-ATLANTIC STATES, May 1979 (Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia)

DOE/RA/04934-08
ELI-79-29 EXECUTIVE SUMMARY: LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POTENTIAL IN THE SEVEN MID-WESTERN STATES, August, 1979 (Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia, Wisconsin)

ELI-79-38 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF THE SMALL SCALE HYDROELECTRIC POTENTIAL OF ALASKA, Rev. October 1979

ELI-80-19 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN CONNECTICUT, Rev. August 1980

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ELI-79-16 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN DELAWARE, August 1979

DOE/RA/04934-09
ELI-79-22 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN ILLINOIS, August 1979

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ELI-79-23 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN INDIANA, August 1979

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ELI-79-24 LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN KENTUCKY, August 1979

ELI-80-20	AN ANALYSIS OF LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF LOW-HEAD HYDROELECTRIC POWER IN MAINE, Rev. August 1980
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Senator HUMPHREY. Thank you.

Dr. Marker?

STATEMENT OF DR. GORDON A. MARKER, PRESIDENT, NATIONAL ALLIANCE FOR HYDROELECTRIC ENERGY

Dr. MARKER. Thank you. I am here representing the National Alliance for Hydroelectric Energy of which I am the president. That is a trade association which encompasses the full range of development needs from finance to developers, entrepreneurs, machinery suppliers. The total membership is about 100, and we are in some 24 States presently.

In addition to that, my firm, Essex Development Associates, has had a certain amount of experiences with the FERC process which is one of the subjects of discussion today. We have a 15-megawatt plant in operation in Massachusetts, in Lawrence, Mass., which went through the FERC major licensing process in 11 months. We also have just started a project in the State of New Hampshire, an exempted project, which from initiation to the beginning of construction took place in 6 months, thereabouts. This is to say that the FERC process works.

What the National Alliance would like to do would be to submit a written statement, and very quickly, to summarize the highlights. There are four broad categories of comment.

One is to call the committee's attention to the section 210 of PURPA and submit that it is essentially for hydrodevelopment and power purchase contract negotiations. The National Alliance has filed an amicus brief in the Mississippi case currently before the Supreme Court. One point that I would like to make in that regard is that it is extremely important that the exemption, that the matters in 210 as they relate to the Utility Holding Company Act are upheld. If not, there will be increasing difficulty in financing hydrosite development.

The second main concern which I would just like to mention is that the National Alliance does indeed support the retention of the investment tax credits. We feel that it addresses part of the imbalance that has historically been accorded to other energy sectors in the American economy, particularly nuclear, and far western hydrodevelopment.

Third, the National Alliance suggests that Federal regulation should be restructured to encourage non-Federal development of Federal sites. There are half a dozen rather specific suggestions here that I would like to comment on.

First, I would hope that the Corps of Engineers and the Department of the Interior, particularly as regards the Bureau of Reclamation sites, establish clear, definitive policies for the development of those sites.

Second, we would suggest that the same entities, the Corps of Engineers and Interior, abandon the present legislative effect to obtain blanket congressional authorization for development of sites of 25 megawatts or less. We feel that the austerity and the appropriate austerity mood at the Federal level and throughout the country really does not warrant an expanded, large-scale water resource, electric resource development activity by both of those entities.

Third, FERC with the Department of Interior's concurrence, consider permitting and licensing those Federal sites where development has been authorized by Congress but where the moneys have not been released. In those cases where they have been dormant for a period of 2 years without appropriate funding, they should return to the market as it were for non-Federal development of such sites.

Fourth, we would suggest that the Department of Interior and the Corps of Engineers reevaluate the current water use charges levied on non-Federal projects at Federal sites. I think a close examination of that will suggest that the present pricing policy is to preclude perhaps by design non-Federal development.

Fifth, the association suggests that the U.S. Fish and Wildlife Service rescind minimum stream flow requirements based on an aquatic base, so-called aquatic base flow method, as an arbitrary standard unless Fish and Wildlife can show that such a flow is mandatory for maintaining the existing fish and wildlife population.

Six and finally on this section, that FERC convene an interagency group chaired by FERC in the position of a lead agency, and this should include officials, appropriate officials from the corps, Interior and Agriculture, as well as industry, and the industry as represented by the National Alliance is willing to participate in such a venture.

Our fourth broad category of concern is that the regulatory process should be centralized, not decentralized, for both Federal and non-Federal sites, and streamlined to reduce costly delays.

Five modest suggestions—one, maintain permitting and licensing authority as opposed to a decentralized State-oriented system or a regional system. I think the history of, the real history of financing projects and fast-track development shows the efficacy of the FERC process.

Second, the alliance suggests that resources be provided to the FERC to manage the increasing number of permits.

Third, we suggest there is a source of funds for those resources that should come from a reasonable preliminary filing fee. That would be submitted, paid by the applicant at the time of the preliminary permit. This I think is a real market test of the ability of the firms to really carry through, and I would suggest a significant fee of $1,000 for a preliminary permit would go some ways in weeding things out.

Senator HUMPHREY. Nonrefundable?

Dr. MARKER. Sure. It is a risk. For those projects that are successful, it could be applied to subsequent filing dates.

Fourth, I think there should be a due diligence statement required by developers along the lines of similar statements that were made this morning. Is there a real credibility to the applicant? I think if that were part of the process, that would stimulate responsible development and not the generation of paper.

Finally, I would suggest that the FERC be allowed to look at the ownership, ownership as the basis for exemption, not simply up to 5 megawatts, but some higher level. Our association has suggested 15 megawatts or less.

I would also suggest that this is not, should not be viewed as a public versus private power issue. I think the gentleman from Pennsylvania made it very clear that the State had an ownership interest in certain dams. This would protect those rights where those are not protected.

Finally, just to pick up on the line of questioning in the last panel, I would voice some reservations about the elimination of the preliminary permit process. I think it can work effectively within the FERC process. I think what we are seeing now is a healthy response to market processes, and I think that FERC needs strengthening, not fragmenting.

Thank you.

[The prepared statement of Dr. Marker follows:]

WRITTEN STATEMENT OF THE NATIONAL ALLIANCE FOR HYDROELECTRIC ENERGY BEFORE THE UNITED STATES SENATE AND NATURAL RESOURCES

19 OCTOBER 1981

Mr. Chairman, Members of the Committee, I am Gordon A. Marker, President of Essex Development Associates, Inc. in Lawrence, Massachusetts and am testifying today as President of the National Alliance for Hydroelectric Energy (NAHE).

The National Alliance is the national trade association organized to promote the production of small hydroelectric power in this country. Our members -- more than 100 developers, financiers, manufacturers, contractors, engineers and consultants -- are located in 24 states and represent those with a serious professional and long-term interest in waterpower generation.

As developers, we have been described as that select group of individuals that pray for rain and OPEC price increases. Clearly, both are fundamental to the future market for hydroelectric power, but unfortunately, neither is subject to industry control nor to Congressional action.

My comments today, therefore, speak to those central issues which fall within our ability to influence -- specifically, how, when and where, and at what price the nation's power potential is developed.

1. Section 210 of PURPA is essential to hydro development and power purchase contract negotiation.

Development of the nation's enormous hydropower potential is dependent upon at least three (3) central elements: the ability to attract substantial capital resources; the ability to sell the power produced at a reasonable price (and buy power at non-discriminating rates); and the ability to distribute that power to customers.

The Public Utility Regulatory Act of 1978 helps supply these essentials and, together with the Investment and Energy Tax Credits, provides the financial foundation for waterpower development.

PURPA, however, is not without its problems. Many utilities see it as stimulating development outside their rate base, raising the cost of power they are forced to buy, and destabilizing a centralized distribution system that heretofore has enjoyed carefully controlled access. Their "affinity" for PURPA encouraged amendments to the House budget bill last June that would have repealed certain portions of the Act. Thankfully, such efforts were not successful.

Some of the less enlightened public utility commissions see PURPA as an encroachment upon their state prerogatives and have sought relief from the federal courts. As you know, the case of the Federal Energy Regulatory Commission, et al. v. the State of Mississippi, et al. is currently under appeal to the Supreme Court. The National Alliance, together with other parties with an interest in renewable energy, have filed an amicus curiae brief in that case. Arguments will be heard this fall; a decision is expected next spring.

The states, entrusted with responsibility for implementing PURPA have been slow to respond. FERC reports that 20 states have adopted rules, rates or procedures. (While some like New Hampshire whose rate is 82 mills or 8.2 cents a kwh and Vermont with a rate of approximately 7.9 mills and Maine with 70 mills have extremely attractive rates, but, twenty-nine states are still deliberating and one state has yet to report at all.) It is interesting to note that the statutory deadline for filing such rates with FERC was March 31, 1981.

Finally, let me confess that I believe very few PURPA contracts will be negotiated between developers and utilities. PURPA and avoided cost have at least three (3) weaknesses. They are typically year-to-year; there is no assurance that the published PURPA rates will not be reduced the next year or the year after; and PURPA contracts generally do not take life-cycle costs into account which is where hydro makes long-term economic and social sense.

Why then is the hydropower industry joining the fight to preserve PURPA both in the Congress and in the courts? In sum, PURPA has changed not only the development climate, characterized by more than 1,800 permits that will be filed with FERC this year, but it has changed the process by which power contracts are negotiated. Heretofore, utilities have had in effect a monopoly on the purchase of power. PURPA has provided an alternative to their purchase price, creating for the first time a point of leverage in utility negotiations.

Can hydropower development proceed without PURPA? Yes, many states have already enacted state versions of the federal act. State law, however, cannot exempt developers from federal regulations such as the Public Utility Holding Company Act and many states may elect not to act.

In conclusion, the industry urges this committee and your colleagues in the Congress to leave PURPA in tact and if, and hopefully when, the decision of the U.S. District Court in Mississippi is reversed, to encourage FERC to aggressively enforce its provisions.

2. Investment and Energy Tax Credits are essential to attracting necessary financing for project development.

To attract the substantial private capital critical to hydropower development, Congress provided an 11 percent Energy Tax Credit as part of the Crude Oil Windfall Profit Tax Act. The Act, together with the 10 percent Investment Tax Credit, have helped make available the necessary investment dollars.

As an example, permits pending before FERC may represent a total investment of $20 billion in total project cost. While recognizing that as many as 25 percent may be competing permits, the investment may translate into 900 million labor hours of on - and off-site labor.

Even with large sums of money already targeted for hydro investment, both tax credits are still essential to development. Language that would have severely limited the impact of the tax credits for individual investors, the so-called "at risk" provisions, would have greatly hampered development by small business whose rate of return would have been significantly reduced. Fortunately and after much work by our association and other renewable parties the provision was deleted.

The bottom line, Mr. Chairman, is that we in the industry have a development window between now and 1988. Given the uncertain regulatory environment ... the substantial sums of capital necessary ... prevailing high interest rates, ... the protracted period of time before the investor realizes any return

... the unpredictability of power contract negotiations ... these credits are critical. With these credits, the money will be available for construction; without it, it seems less likely.

Recently, the Administration has begun to explore ways to improve the revenue stream in light of growing federal deficits. We would respectively request that they look elsewhere and maintain the current tax credits. The Department of Energy's Small Hydro Program has already been terminated to meet budgetary targets -- a step justified in large part on the basis of the continued existence and these tax credits. Corporations have just now begun planning for their projects based on these credits. To terminate them now, after they have just begun to work, would only encourage the type of skepticism regarding consistency in the Administration's economic policies presently finding expression on Wall Street.

3. Federal regulations should be restructured to encourage non-federal development of federal sites.

In addition to enforcing PURPA and preserving the tax credits the federal government can substantially enhance domestic energy production by establishing a clear cut policy concerning the non-federal development of federal sites.

As stated by the General Accounting Office in its report in September of 1980:

> Expeditious development of hydroelectric resources at federal dam sites can be accomplished by a consistent federal policy ... we found the absence of such a consistent policy to be an impediment to non-federal development. The federal policy in place is fragmented...often conflicting and inconsistent.[1]

The U.S. Army Corps of Engineers in its preliminary report, issued as part of the National Hydropower Study, concluded that current development conditions are "far from rational and in much need of reform". The report specifically, noted that changes are needed in the development rules which federal agencies perform; the development procedures and processes which both Federal and non-federal developers must follow; and in the development procedures and responsibilities which state government entities must undertake.

The conclusion reached by GAO, if not by the Corps, is that "non-federal developers could reduce federal outlays and get power on line quickly."[2]

We in private industry agree and offer the following recommendations to reduce many of these inconsistencies, specifically that:

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[1] "Non-federal development of hydroelectric resources at federal dams -- Need to establish a clear federal policy," (Doc. No. B - 200490), September 26, 1980.

[2] Loc. cit.

1) COE and DOI establish clear and definitive policies that encourage non-federal development. Such policies should provide for non-federal development of sites unless it can be shown why the site should be federally developed and that federal funds are available for construction and operations.

2) COE and DOI abandon legislative efforts to obtain blanket Congressional authority for development of 25 MWs or less. Such initiatives are contrary to the Administration's emphasis on private sector development and contravene the intent of the President's Economic Recovery Tax Act of 1981.

   Mr. Chairman, at a time when funds for Social Security benefits, school lunches and even defense are being curtailed, I find it inconceivable that federal agencies are requesting funds for such development where private capital is available.

3) FERC with DOI concurrence, consider permitting and licensing those federal sites where development has been authorized by Congress, but monies have not been appropriated, especially those sites laying dormant without funds for more than two years.

4) DOI and COE re-evaluate current water use charges levied on non-federal projects at federal sites. Such charges assessed by DOI approach 50 percent of net proceeds -- a policy that is obviously unreasonable and substantially restricts energy production.

5) The US Fish and Wildlife Service rescind minimum stream flow requirements based on the Aquatic Base Flow method as an arbitrary standard unless USF & WS can show that such a flow is mandatory for maintaining the existing fish and wildlife populations.

6) FERC convene an inter-agency group, chaired by FERC and including officials from COE, DOI, USDA and industry representatives, to discuss guidelines and procedures appropriate to non-federal development and to review regulatory changes proposed in these hearings.

4. Non-federal regulatory procedures should be centralized and streamlined to reduce costly delays.

Congressional efforts to stimulate interest in hydropower development -- PURPA, tax credits, etc. -- have exceeded all expectations.

The hydropower marketplace has been described as the twentieth century version of the gold rush, complete with claim jumpers and developers lugging krugerrands to the bank.

Indeed, the Chairman has upon occasion raised a compelling question concerning the paper blizzard that PURPA has wrought on FERC -- referring to some developers as "producers of paper rather than power" and in selected circumstances, I concur with your ascessment.

As you are well aware, the hydro boom has increased the number of preliminary permits from 12 in 1976 to 501 in 1980. FERC anticipates that approximately 1800 will be filed by the end of 1981.

This overly-active market presents several problems for the federal regulators and the serious developers. First, in the name of site control, individuals without the financial means to construct facilities are sitting on prime sites. Second, the sheer volume of applications is placing an unusual burden on FERC staff. Third, and perhaps of primary importance, solid, sound applications are being delayed and project costs escalating as the processing time becomes protracted.

NAHE, therefore, recommends the following steps be taken to centralize the process, eliminate frivolous applications, and reduce regulatory delays.

(1) Maintain federal permitting and licensing authority as opposed to a decentralized system operated at the regional or state level.

COE in its preliminary NHS report suggested a decentralized approach to licensing and proposed returning regulatory responsibility to the states. Similar suggestions may be made in the course of these hearings. It is the view of the vast majority of developers that such action would result in something short of regulatory chaos. Many state governments have permitting systems that are based upon federal procedures; most do not have a one-step permitting process, but require developers to deal with 10 or more individual agencies in each state; few states have the financial resources (especially in light of budget reductions) to assume the responsibility of detailed application review. Simply put, if FERC did not exist; we would have to invent it to expedite hydropower development.

(2) Provide resources to FERC to manage the increasing number of permits.

While the number of preliminary permits has increased dramatically, the number of FERC staff has experienced only modest adjustment. Given the national security importance attached to energy independence, this strategy of creating permit backlogs and restraining development seems short-sighted at best.

(3) Introduce reasonable preliminary permit filing fees.

Licensing fees paid by the industry presently cover only the costs of administration, once the license has been awarded. NAHE has recommended to FERC and now recommends to this Committee that these fees be modestly increased to cover the full cost of processing. Our association furthermore recommends that a portion of these fees be paid at the time preliminary permit applications are filed -- (approximately $1/kw of capacity) -- both to discourage frivolous applications and to help cover the cost of initial processing.

These permit filing fees would later be applied to licensing charges once a license was issued.

(4) Require a "Due Diligence" statement from developers.

A traditional criticism of the current regulatory process is that speculators are sitting on sites they are unable to develop. A due diligence requirement would require developers to demonstrate their financial capacity to perform the required work.

(5) Permit FERC to grant waivers or ownership exceptions for projects of 15 MWs or less.

Such exemptions, similar to a short form IRS statement, would reduce the burden on FERC staff, introduce additional certainty into the process, especially for sites in that category, and by relying on an ownership preference, would diminish much of the claim jumping syndrome referred to earlier.

Finally, Mr. Chairman, I want to thank you for this opportunity to appear before the Committee today to testify on these issues of critical importance to the future development of the nation's waterpower resource. No one is more sensitve to these problems than the responsible members of our industry and no one is more determined to help resolve those problems. Thank you.

Senator HUMPHREY. Thank you, Dr. Marker.
Mr. Rosholt?

STATEMENT OF JOHN A. ROSHOLT, ON BEHALF OF THE NATIONAL WATER RESOURCES ASSOCIATION

Mr. ROSHOLT. Mr. Chairman, I am a lawyer in Idaho, and appear today representing the National Water Resources Association, and I am pleased to be here. I have a full statement I would ask be included in the record.

Senator HUMPHREY. Yes.

Mr. ROSHOLT. Mr. Chairman, it's a zoo out where I come from. I don't think we have had this many nonresidents come to Idaho since the Gold Rush of 1860, and while we appreciate that engineering has been a little slow, I think we had probably 51 corporations stay in the State of Idaho during the last year to qualify to file for water permits and meet FERC requirements.

The association I represent involves 18 Western States, and it is a federation of State associations, and we represent power producers and people that irrigate and people that supply domestic systems, including the four major cities or largest cities west of the Mississippi.

To put this in perspective, in my particular area I represent irrigation companies that deliver to about 5 million acres—pardon me—500,000 acres. The association represents those who deliver to 25 million acres. In my little complex of canals, there are probably 40 to 50 small hydro sites, some classified as small, some conduit ranging from 10 megawatt to half a megawatt, so there is potential out there, and what has developed is a real mess, frankly.

I would have to concur with those who previously testified that we have to do something to protect the owners, whether they are Federal, State, municipal or private. The owner ought to have some rights, and I would concur with those who suggest that perhaps the States can help us sort that out, whether it be through a water right permitting process as a prerequisite to go to FERC, or whether we exempt to a given level or I have noted with interest and I have attached to my statement a position of the Western State Engineers representing 19 States who advocate that FERC jurisdiction be abolished for all hydropower license intrastate. I guess the only fight left would be in the Snake River between Idaho and Oregon if they had their way, but it's frankly a zoo.

In my State, the permitting process, they would prefer an owner, they require him to demonstrate financial resources, that he is in the public interest. They are also required to coordinate with the water quality agencies, the fishery agencies, and the condemnation power that is usable at the State level is much more limited than the Federal condemnation power. Many people, even though they would qualify for a small project, will seek out FERC licensing to obtain that power which is not available at the State level in such broad terms. Perhaps even a $5,000 filing fee which is required of me for a 9-megawatt plant on a canal in my State, if that were a FERC requirement, you may only have 600 applications as opposed to 1,800.

I would like to comment briefly on the charges situation. While I believe that the Feds ought to have the right to build at their own dams, whether authorized or not, and the Congress has got to make a determination whether you are going to give them money, if you would put them in the seat of selecting who should be the licensee of the development of that power, then perhaps the equitable owners mentioned before, the people who own the space and the reservoir or who have paid for a substantial portion of the reservoir, would be preferred.

In one instance, Jackson Lake Reservoir, smack in the middle of Teton National Park, has seven applicants, municipal and private. The Bureau of Reclamation is a title holder to the dam, and my clients paid for the construction of the dam back before there were nonreimbursables. Certainly we are not going to probably build a powerplant at Jackson Lake Dam, but there are seven applications pending at FERC on that facility. It's wild!

I think if you will allow the corps and the Bureau to work out some kind of a mechanism by which to license people to construct facilities, they can pick those that are bona fide and in fact prefer those who already have ownership interest.

The 50-percent charge was mentioned by many. I think each site has to be evaluated on an individual basis. In some cases, 50 percent of net may still be low enough that that provides an incentive for someone to proceed to construction, and I am not advocating that these owners be protected on an unlimited basis. I think we need the energy in America, and perhaps some reasonable period of time to schedule and to finance these objectives ought to be obtainable.

I would also agree that the preliminary permit process should be maintained if you are not going to concede jurisdiction to the States so that those conflicts can be resolved.

One other thing that has been bandied about this morning is that we standardize some place on conduit exemptions and small project exemptions, and in those situations, we seem to have a different number every place. We have got an 80-megawatt qualification for a cogenerator, but you can only build 5 under an exemption, or on conduit you are limited to 15 and you have to use the water for some ultimate purpose. In irrigation facilities per chance we can use some of them in the wintertime if we didn't have that requirement of the ultimate use for irrigation. It doesn't make much sense at 20 degrees below zero.

The tax benefit is limited to the facilities of 25 megawatts. I think these things ought to be looked at in perspective, that perhaps we could make those uniform.

Thank you.

[The prepared statement of Mr. Rosholt follows:]

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WATER RESOURCES
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Las Vegas, NV
R. G. Johnson
Clinton, OK
Jeff Nelson
Madison, SD
Edward H. Southwick
Ogden, UT
Joe Horrall
Seattle, WA
Merl Rissler
Casper, WY
Lyle Bush
Associate Member
Annita Frenzen
Women's Division

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON WATER AND POWER
HONORABLE SENATOR FRANK H. MURKOWSKI, CHAIRMAN

Statement of John A. Rosholt
Representing National Water Resources Association
Subcommittee Hearing
Washington, D. C.
October 19, 1981

Re: Hydroelectric Development and Licensing Procedure

Mr. Chairman, Members of the Committee, Ladies and Gentlemen:

The National Water Resources Association will be 50 years old in 1982. While originally oriented only as the civilian force to educate the nation concerning reclamation development in the 17 western contiguous states, our membership now represents 18 state organizations which now represent approximately 25 million acres of irrigated land. Among our membership are included municipalities such as Denver, Dallas, Phoenix and Los Angeles, and we find we have many industrial water users among our present state associations. Our Association also represents both public and private power interests which account for over one-half of the electrical generation capacity in the 18 western states. Our member states comprise more than 50% of the land area of the continental contiguous United States. With the exception of Alaska, our states comprise the bulk of the public lands of the United States.

While certainly our Association members divert more water from the natural streams of our nation than any other group of people, we feel we continue to contribute substantially to our nation's agricultural, industrial and municipal superiority and help our country balance its trade deficits.

I have hereafter tried to outline (not necessarily in preferential order) a list of our Association's concerns and develop certain scenarios as a part of my statement for the Committee's staff review following the hearing. Our general concerns are as follows:

I. Better Protection for the Owner/Beneficial Owner of Existing Facilities.

Whether the owner of existing facilities with undeveloped hydro power potential be federal, state, or private, we submit that the owner of such existing facility ought to be protected to the extent possible in their development of the hydro power resource at their own facilities. While we recognize that perhaps owners should not be protected for an indefinite length of time since the power is needed, PURPA has precipitated many situations where the owner loses the developmental rights, or is forced to immediately propose a development at his own facility so as to be able to protect his developmental rights at that facility. Many times the owner's proposal is forced prior to an adequate study having been completed. Having personally followed several small hydro projects from start to finish, it appears that somewhere in the neighborhood of ten years should be afforded the owner. Exhibit "A" shows a recent compilation of filings on facilities in the Pacific Northwest Region of the Bureau of Reclamation. Exhibit "B" attached to this statement depicts a situation where other than the owner is attempting to develop power facilities on a reclamation dam. Exhibit "C" gives one state's opinion.

The Bureau of Reclamation and the Corps of Army Engineers have jurisdiction to develop unconstructed power facilities if Congress authorized "power" as a part of the project authorization. If no power authorization exists, these facilities are open to development under such license conditions dictated by FERC. Perhaps a part of FERC's burden could be relieved if Reclamation or Army were allowed to lease the developmental rights to the lessee of their choice. In our opinion the interests of the United States might be best protected and power could be developed. Reclamation and Army could protect equitable owners' interest by regulating a priority in leasing. Another aspect of this problem is that the lessee of either Army or Reclamation must then obtain a FERC license. It seems to us that this requirement in this situation may be excessive because certainly Army and Reclamation are not going to permit a development of the power project to conflict with the operation of facilities already constructed.

Perhaps this right of Reclamation and Army ought to be protected for a limited period of time, perhaps ten years. Thereafter, if no development has begun or no lease has been awarded, the facility would be open to a "race" situation that now exists. (See Exhibit "E" for one project's ideas.)

Some protection must also be accorded private facility owners. Presently the owner is not protected unless they have the municipal preference and a prior applicant does not, or the site is under 5 m/w or a conduit facility where the owner can obtain an exemption if the application is timely filed.

The Bureau of Reclamation has built irrigation facilities that provide water supplies to approximately 12.5 million irrigated acres in the west. In many situations, portions of those facilities are being purchased by the project beneficiaries from the United States on contract. Some contracts specify that the government will retain certain of the facilities as "reserved works" and other contracts provide for the conveyance of the facilities to the operating entity upon repayment. In situations where the facilities are other than "reserved works" and the contract purchaser has the equity interest in the facility or certainly the beneficial ownership, we suggest that regulations be developed that would protect the remaining interest of the United States, and also provide adequate incentive for the beneficial owner to develop the hydro power. If the Department of Interior or the Corps of Engineers will insist upon half of the net profits of the operation or a given figure which might amount to all of the net profits, the incentive for the developer certainly disappears. We would suggest that in situations where such a relationship exists, that the beneficial owner be preferred in the development, but that the federal agency also be protected. We think this can be done by suggesting that any revenues (over and above debt service, operation, maintenance and reasonable reserves, for the hydro power plant that would be constructed) would be applied on the obligation to the United States until the same had been repaid, thereafter those revenues would be available to the owner entity or split with the United States on something less than a 50% basis. (See Exhibit "H") While we wish to recommmend the protection of the developmental rights, all of the ownership interests must also be protected. We think this recommendation would encourage hydro development on existing federal facilities as well as protect the interests of all owners, including the United States.

Perhaps these beneficiaries are entitled to a return if Reclamation develops and the beneficiaries have paid back all or portions of the original project cost. Perhaps these monies could be used to continually improve projects and lessen the need for interest free loans. (See Exhibit "G")

II. Water Rights Under State Law Should be a Prerequisite for Either a FERC Exemption or a FERC License.

Many of the problems that FERC presently has with 1,800 pending applications results because most applicants have disregarded the State's role in hydro power development. While we recognize that the cases suggest that FERC need not require a state water right permit as a prerequisite to a federal license, in at least the arena of small hydro, certainly prior compliance with state law would help eliminate the administrative backlog that now exists. Certainly *First Iowa Hydroelectric Co-op vs. Federal Power Commission*, 328 U.S. 152 (1946), clearly suggested that Section 27 of the Federal Power Act need not be specifically dealt with. Our Association has long advocated adherence to state water rights by everyone, including the federal agencies. If each applicant who seeks to use a state water resource for the development of a hydro plant were required to obtain the necessary state permit, many competing applicants would be sorted out. Generally states require ownership of the facilities at the intended place of beneficial use as a prerequisite to obtaining a state permit. Then only in situations where more than one applicant was successful in obtaining a state water permit, would the conflict have to eventually be resolved by FERC. While FERC is guided by the Federal Power Act and must decide in favor of "the best development of the resource" we feel that the best development and probably the most feasible in most cases can be put together by the owner because of the many interfaces that would otherwise exist. Usually the owner is in the best position to obtain financing. If the applicants are not in good faith, or are not sorted out through the state permitting process, FERC's preference for the owners is necessary so orderly development can proceed. (See Exhibit "I" as position of Western State Engineers.)

Recent authority in California vs. United States, 438 U.S. 645 (1978) helps make an inroad into the first Iowa decision. We support oversight legislation for PURPA that would clarify these conflicts and best protect those owners and others who have sought and obtained the state permissions. My own state of Idaho proposes that FERC delegate all licensing in the state to the state. (See Exhibit "J")

One of the resulting problems of not requiring prior state permission is that if one is licensed by FERC, he obtains the federal condemnation power granted by the Federal Power Act. The possibility exists of the use of that condemnation power to condemn a state water right even though the same would not be obtainable through condemnation under state law. In contrast, if a FERC exemption is granted and no license obtained for the development of the project, it is the opinion of many that the federal condemnation power of the Federal Power Act does not apply. Consequently, perhaps a way to solve this problem for most projects would be increase the size of projects which would be exempted for the owner. Part of the requirements for filing for an exemption (presently limited to 5 megawatts for small facilities) is that the applicant owns the land and the facilities. PURPA also defines a cogenerator as one who builds a plant no larger than 80 megawatts. While our Association is not suggesting that plants of up to 80 megawatts should be exempted by FERC, certainly some size above 5 megawatts would help eliminate the competition problem that exists.

III. Conduit Facilities.

While the conduit exemption is limited now to 15 megawatts, perhaps proper oversight legislation would standardize the small project exemption and the conduit facility exemption at a higher number to help eliminate the administrative backlog at FERC. Non-owners should be precluded from filing for formal license and later use the condemnation power to establish a joint use of the conduit or an existing facility. Also the exemption should not require ultimate water use be for another purpose when the owner proposes a conduit facility. Many irrigation conduits could generate in other than the irrigation season if winter water was available. A possible energy source may be lost for one who does not want the administrative hassle of licensing for a part year use.

IV. Preliminary Permit Process Should be Retained.

As suggested above, we think that requiring a prior state water right before approaching FERC would facilitate development and protect those with vested interests. On the other hand, if more than one applicant obtains such a state water right permit, certainly the preliminary permit process that now exists at FERC is one of the mechanisms by which the preferred development can be permitted. Presently, owners competing for a preliminary permit for a project can be forced under regulations, by any applicant who files a "notice of intent to file an application for license", to either file a competing application for license or lose out on their own facility. Under the regulations, if the time requirements of such a notice can be met by a non-owner and the application for formal license filed within four months, such an applicant can put himself in the priority position in spite of owner's interests, municipal preferences, etc. Again we need regulation to protect the owner for a reasonable period of time before such development would be allowed on a facility not owned by applicant.

V. Amendment to Windfall Profits Tax Act.

Part of the reason that PURPA has not resulted in a multitude of small projects being developed is the difficulty in obtaining financing. The Windfall Profits Tax Act allows qualifying entities to use tax exempt bonds for facilities up to 25 megawatts at existing dams. Again we must suggest that a larger limit that corresponds to a new size for an exempted project, or 80 megawatts (the definition of cogeneration facility under PURPA) would make better sense. The two county rule of Revenue Code § 103 still provides a blockade for many who wish to finance plants through the use of tax exempt financing. An amendment also is needed to clarify that a qualifying entity's bonds are tax-exempt even though the power is sold to a private, and regardless of where the power is used. As we read it, the purpose of PURPA is to promote hydro development. This can best be done by again protecting the owner but yet giving him the same financing alternatives as others. This proposal would require an amendment to the Internal Revnue Code.

SUMMARY

We commend FERC for their ongoing reviews. We thank the Committee for this hearing and the opportunity to discuss these issues.

Thank you for your courtesy. I would try to answer your questions. I ask that the full text of this statement be included in the record.

Respectfully submitted,

John A. Rosholt

JOHN A. ROSHOLT

JAR:bg

EXHIBIT A

RECEIVED [illegible] 28 1981

SEP 16 [illegible]

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

FERC No.	Site	Applicant	MW	Recon	STATUS FERC Study Permit Apply	Issue	FERC License Apply	Issue/ Exempt	Under Construction	Complete
[illegible] PROJECT										
[illegible]	Mason Dam	Cascade Water Power Development Corporation*	N/A		x	x				
[illegible]31		ENAGENICS*	1.7		x					
[illegible]	Unity Dam	Cascade Water Power Development Corporation*	1.1		x					
		Burnt River ID*	1.5-2.0		x					
[illegible]	Thief Valley Dam	Cook Electric*	0.9		x					
[illegible]		Lower Powder River ID and Union County*	0.6		x					
[illegible] PROJECT										
[illegible]	Lake Como	Energenics System, Inc.	0.6		x					
BOISE PROJECT										
[illegible]	Main Canal Drop	Boise Project Board of Control	1.9	x			x			
[illegible]	Cascade Dam	Idaho Power Company*	12.8	x	x	x	x	x		
--		Black Canyon ID*	N/A				x			
--	Boise River Siphon	Black Canyon ID	N/A	x						
--	Arrowrock Dam	PN Generating Company*	N/A	x						
3632		Mitchell Energy Company*	220.0		x					
3556		Boise-Kuna, New York, Nampa and Meridian, Wilder, and Big Bend IDs*			x	x				
			60.0		x					
3737	Lower Deer Flat Dam	Mitchell Energy Company	7.8		x					
3650		City of Ammon*	4.9-6.3		x	x				
3705	Deer Flat Low Line	John J. Hockberger*	1.2		x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

FERC No.	Site	Applicant	MW	Recon	FERC Study Permit Apply	FERC Study Permit Issue	FERC License Apply	FERC License Issue/ Exempt	Under Construction	Complete
BOISE PROJECT (Cont.)										
22	Upper Deer Flat Dam	Mitchell Energy Company*	8.8		x					
51		City of Ammon*	5.7-8.8		x	x				
[illegible]	Mora Drop	Boise Project Board of Control	0.5		x					
[illegible]	Main Canal No. 6		1.1		x					
56	Low Line No. 8		0.4		x					
39	Golden Gate		0.7		x					
42	Fargo No. 1		0.6		x					
[illegible]	Deadwood Dam	Mitchell Energy Company*	6.5		x					
[illegible]		City of Ammon*	3.9-6.4		x	x				
31	Black Canyon Dam	ENERGENICS	70.4		x	1/				
COLUMBIA BASIN PROJECT										
[illegible]	Potholes East Canal 22.7*	South, East and Quincy Columbia Irrigation Districts	5.0	x	x	x	x	x	x	x
[illegible]	Summer Falls		74.9	x	x	x	x			
43	Potholes East Canal 66.0		2.6	x	x	x	x			
[illegible]	O'Sullivan Dam		4.5	x	x	x				
[illegible]	East Branch Canal 4.6		2.2	x	x	x	x			
[illegible]	Dry Falls Dam		14.5	x	x	x	x			
55	Potholes East 16.4 Wasteway		0.3		x					
31	Rocky Coulee Wasteway		6.7		x					
59	Scooteney Inlet		2.8		x	x				
84	CCL4		0.6		x					
36	Sand Hollow		1.7		x					
37	Quincy Chute		3.8	x	x	x	x			

1/ Intervention requested on basis of authorized Federal power project and existing Federal powerplant.

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

					STATUS					
					FERC Study Permit		FERC License			
C	Site	Applicant	MW	Recon	Apply	Issue	Apply	Issue/ Exempt	Under Construction	Complete
BIA BASIN PROJECT (Cont.)										
0	Potholes East Canal 22.7*	Mr. Cyril M. Jones	N/A	x	x					
-	Ringold Wasteway	Continental Hydro	N/A	x						
1	Potholes East Canal 1720+44	Energenics Systems	0.7		x					
1	EL 85 - Station 676+50		0.3		x					
2	EL 85 - Station 100+29.6		0.4		x					
3	EL 85 - Station 123+25		0.4		x					
1	EL 68 - Station 31+00		0.4		x					
5	EL 68 - Station 65+54.65		0.4		x					
2	Scootnay Wasteway		1.0		x					
[illegible]	East Branch Canal 11.9		1.2		x					
[illegible]	EL 68 - Station 135+76.24		0.4		x					
37	Long Lake Dam Canal		67.6		x					
[illegible]	PEC 1973+00		2.3		x					
ED RIVER PROJECT										
-	Prineville Dam	PN Generating Company*	2.7	x						
13		Ochoco ID*	5.5		x	x				
31		ENAGENICS*	4.2		x					
21		Cascade Water Power Development*	15.7		x					
SCHUTES PROJECT										
-	Wickiup Dam	PN Generating Company*	5.0	x						
60		Cascade Water Power Development Corporation*	N/A		x					
50		North Unit ID*	7.0		x	x				
98		ENAGENICS*	6.6		x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

					STATUS					
					FERC Study Permit		FERC License			
FERC No.	Site	Applicant	MW	Recon	Apply	Issue	Apply	Issue/ Exempt	Under Construction	Complete
DESCHUTES PROJECT (Cont.)										
-	Crane Prairie Dam	PN generating Company*	N/A	x						
		Cascade Water Power Development Corporation*	0.6		x					
[illegible]1		Energenics Systems*	0.6		x					
-	North Unit Canal NP 43	PN Generating Company	N/A	x						
[illegible]	North Unit Canal NP 45	North Unit ID*	2.2-3.3		x	x				
[illegible]		Mitchell Energy Company*	2.2		x					
[illegible]		ENAGENCIS*	6.0		x					
-		PN Generating Company*	N/A	x						
[illegible]		Ochoco ID*	1.6		x	x				
[illegible]3	Ochoco Dam	Cascade Water Power Development Corporation*	1.2-2.4		x					
[illegible]76		Energenics Systems*	0.5		x					
[illegible]56	North Unit Canal MP 46	Mitchell Energy Company*	1.8		x					
		ENAGENCIS*	3.4		x					
327	Haystack Dam	North Unit ID	N/A		x	x				
-	North Unit Canal MP 50	PN Generating Company	N/A	x						
-	North Unit Canal NP 51	PN Generating Company*	N/A	x						
[illegible]28		North Unit ID*	1.9-2.6		x	x				
GRANT PASS PROJECT										
[illegible]69	Savage Rapids Dam	PNGC, UPPA, and Grants Pass ID*	7.5-10.0		x	x				
389		ENAGENICS*	9.2		x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

FERC No.	Site	Applicant	MW	Recon	STATUS FERC Study Permit Apply	 Issue	 FERC License Apply	 Issue/ Exempt	Under Construction	Complete
LEWISTON ORCHARDS PROJECT										
-	Webb Chute	Lewiston Orchard's ID	N/A	x						
LITTLE WOOD RIVER										
.26	Little Wood River	Continental Hydro Corp.	2.1		x					
MINIDOKA PROJECT										
	Island Park Dam	Fremont-Madison ID*	4.0	x	x					
573		Fall River Electric*	4.0	x	x	x				
[illegible]	Jackson Lake Dam	Mitchell Energy Company*	10.0		x					
505		PN Generating Company*	8.6		x					
		Lower Valley Power and Light*	N/A	x						
[illegible]		City of Lander & Wyoming Hydro*	8.5		x					
37		City of Riverton*	8.4-9.5		x					
30		City of Gillette*	6.7		x					
322		Town of Jackson*	6.0-9.0		x					
-	Slide 15, North Side Canal	Minidoka ID	N/A	x						
248	Palisades Dam	State of Idaho	90.0	x	x					
158	Milner Gooding Canal	ENAGENICS	3.8		x					
991	Crosscut Diversion Dam	Energenics Systems	2.7		x	x				
OWYHEE PROJECT										
175		Energenics Systems*	15.0		x					
467	Owyhee Dam	PN Generating Company*	5.5	x	x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

ERC No.	Site	Applicant	MW	Recon	STATUS FERC Study Permit Apply	Issue	FERC License Apply	Issue/ Exempt	Under Construction	Complete
YHEE PROJECT (Cont.)										
383		Cascade Water Power Development Corporation*	16.4		x					
354		Owyhee Project IDs*	5.5		x	x				
-	Tunnel No. 1 Outlet	PN Generating Company*	5.8	x						
59		Owyhee Project IDs*	8.0		x	x				
UE RIVER BASIN PROJECT										
479	Howard Prairie	Talent ID	0.2		x					
[illegible]	Emigrant Dam	Cascade Water Power Development Corporation*	1.7		x					
59		Energenics Systems*	0.8		x					
325		Talent ID*	1.8		x					
LATIN PROJECT										
-	Scoggins Dam	Tualatin Valley ID*	N/A	x						
		Cascade Water Power Development Corporation*	N/A		x	x				
ATILLA PROJECT										
62	Three Mile Falls Diversion	Cascade Water Power Development Corporation*	N/A		x					
964		ENAGENICS*	3.1		x					
403		West Extension ID*	4.4		x					
27	McKay Dam	Cascade Water Power Development Corporation*	3.2		x					
67		Stanfield I.D. & Westland ID*	1.1		x					
136		Energenics Systems*	3.8		x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

FERC No.	Site	Applicant	MW	Recon	STATUS FERC Study Permit Apply	 Issue	 FERC License Apply	 Issue/ Exempt	 Under Construction	 Complete
ALE PROJECT										
437	Warm Springs Dam	Cascade Water Power Development Corporation*	3.0		x					
235		Warm Springs ID & Vale-Oregon ID*	3.0		x	x				
5	Agency Valley Dam	Cascade Water Power Development Corporation*	2.4		x					
		Cook Electric Company*	0.9		x					
336		Vale-Oregon ID*	2.0		x	x				
AKIMA PROJECT										
-	General Project Area	Kittitas Reclamation District and Roza ID	N/A	x						
-	Clear Creek Dam	Benton REA*	N/A	x						
713	Clear Lake Dam	Mitchell Energy Company*	1.5		x					
53		Cook Electric Company*	0.47		x					
01		City of Yelm, Pacific Hydro*	5.0		x					
39		Yakima-Tieton ID*	1.7		x					
-	Tieton Dam	Benton REA*	10.0	x						
388		Cook Electric*			x					
556		City of Teninog Pacific Hydro*			x					
701		Yakima-Tieton ID*	10.0		x					
29	Roza Diversion Dam	Kittitas PUD*	6.0	x	x	x				
207		ENAGENICS*	5.5		x					
438	Keechelus Dam	Kittitas PUD, City of Ellensburg*	4.4	x	x	x				
716		Mitchell Energy Company*	3.0		x					
497	Kachess Dam	Kittitas PUD and Ellensburg*	3.2	x	x	x				
715		Mitchell Energy Company*	3.5		x					

INTEREST IN HYDROPOWER POTENTIAL AT SERVICE FACILITIES - PN REGION

FERC No.	Site	Applicant	MW	Recon	STATUS FERC Study Permit Apply	 Issue	 FERC License Apply	 Issue/ Exempt	Under Construction	Complete
AKIMA PROJECT (Cont.)										
486	Easton Diversion Dam	Kittitas PUD*	3.0	x	x	x				
4172		ENAGENICS*	3.2		x					
	Kittitas Main 11+43	American Small Farm Institute	N/A	x	x					
257	Zillah Wasteway	Sunnyside Valley ID (Board of Control)	N/A		x					
485	Cle Elum	Kittitas PUD and Ellensburg	20.0		x	x				
505	Bumping Lake	City of Yelm and Pacific Hydro*	22.5		x					
[illegible]	Enlarged Bumping Lake	Puget Sound P&L*	14.0		x					
360	Bumping Lake	Roza ID*	31.0		x					
484	Swauk Creek	City of Ellensburg and Roza ID	N/A		x	x				

Competing proposals

A jurisdictional issue of apparently first impression, regarding the scope of the Federal Energy Regulatory Commission's (Commission's) jurisdiction to license hydroelectric facilities under Part I of the Federal Power Act, has been raised in two Commission preliminary permit proceedings by pleadings filed by Salt River Project Agricultural Improvement and Power District (District) and the Salt River Valley Water Users' Association (Association), and the Department of the Interior (Interior). The two proceedings involve Applications for Preliminary Permit filed at Bartlett and Horseshoe Dams on the Verde River in Arizona. Bartlett and Horseshoe Dams were constructed by the Association under contract with the United States pursuant to the provisions of the Reclamation Act of 1902 and prior to the enactment of Part I of the Federal Power Act of 1920. Pursuant to this contract, the Association was entrusted with the care, operation and maintenance of these two dams while the United States retained title. Subsequently, the Association conveyed to the District the obligation to care, operate and maintain these dams although the Association retains control over the operations of the irrigation functions of these two dams. There are presently no hydroelectric facilities at either dam.

In the fall of 1980, several private developers filed Applications For Preliminary Permits to study the feasibility of hydroelectric development at both dams. Specifically, Mitchell Energy Company, Inc. (Project No. 3694-000) and ENAGENICS (Project No. 3953-000) filed Applications for Preliminary Permits at Bartlett Dam. In addition, Mitchell Energy Company, Inc. filed an Application for Preliminary Permit at Horseshoe Dam (Project No. 3736-000).

In response to these applications the Association/District and Interior have intervened in all three proceedings and protested the Commission's consideration of these applications on the grounds that pursuant to the Reclamation Laws and contracts entered into pursuant to these laws, Interior has exclusive jurisdiction over hydroelectric development at both these BuRec dams. In the alternative, the District/Association have requested the Commission convene a hearing to consider this matter. The National Water Resources Association (NWRA) has intervened in support of the position advanced by the District/Association and Interior. To date, the Commission has granted all three parties' petitions to intervene but has not taken any further action in response to this direct challenge to its jurisdiction over hydroelectric licensing.

EXHIBIT B

COLORADO RIVER COMMISSION
OF NEVADA
Telephone (702) 733-7755

MAILING ADDRESS
P. O. Box 19090
Las Vegas, Nevada 89132

OFFICE ADDRESS
4220 Maryland Parkway
Building B, Suite 402
Las Vegas, Nevada 89109

September 30, 1981

John A. Rosholt, Esquire
Nelson, Rosholt, Robertson, Tolman & Tucker
P. O. Box 1906
Twin Falls, ID 83301

Dear Mr. Rosholt:

Attached are our comments which were provided to Mr. Donald L. Paff, Nevada's member of the National Water Resources Association Board of Directors, relative to your proposed statement which was intended to be delivered to the Subcommittee on Water and Power of the Committee on Energy and Natural Resources on August 17, 1981 in Anchorage, Alaska. It was our feeling that certain areas of the proposed outline could be strengthened by further clarification in the areas listed.

It appears from your letter of September 25, 1981 that you received no comments from the State of Nevada and, therefore, we are supplying this material to you directly.

Sincerely,

Duane R. Sudweeks
Director

Attachment

EXHIBIT C

August 13, 1981

Mr. Donald L. Paff
General Manager
Las Vegas Valley Water District
3700 West Charleston Blvd.
Las Vegas, NV 89153

Dear Mr. Paff:

We have carefully reviewed the material supplied to you by the National Water Resources Association Board of Directors regarding the Federal Energy Regulatory Commission and the Senate Committee on Energy and Natural Resources hearing scheduled for August 17, 1981. It is our feeling that certain areas of the proposed outline could be strengthened by further clarification in the following areas:

1. First consideration for approval of projects should be directed to denial of permits for development of project by opportunistic speculators which would not be in the best interest of the users of the power developed by a project.

2. Priority should be given to developers such as utilities or irrigation districts which intend to use the power to meet its own needs.

3. An owner/operator holding a water right should have preference over a water right holder who is not the owner/operator provided, however, that if the owner/operator is not interested in developing the resource, the non-owner/operator should be allowed to proceed on fair and equitable terms unless it can be shown that the development would cause irreparable harm.

We appreciate the opportunity to comment on this matter.

Sincerely,

ORIGINAL SIGNED BY
DUANE R. SUDWEEKS

Duane R. Sudweeks
Director

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

[illegible]

P.O. BOX 53585 • 1000 N E 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

October 5, 1981

Mr. John Rosholt
Attorney-at-Law
P.O. Box 1906
Twin Falls, Idaho

Dear Mr. Rosholt:

Pursuant to your letter to Mr. R.G. Johnson requesting Oklahoma's comments on the current regulations under which the Federal Energy Regulatory Commission (FERC) of the U.S. Department of Energy operates, I would like to offer the following observations and suggestions based upon our somewhat limited involvement with FERC.

As you will recall, under the Carter Administration, energy self-sufficiency became a national priority, with both public agencies and private corporations encouraged to develop additional energy sources. Hydroelectric power, due to its relatively cheap source of supply and minimal environmental impacts, developed into an attractive energy alternative and was promoted by offering federal financial assistance through DOE to private or non-profit corporations to study the economic feasibility of adding additional generating units at federal reservoirs already authorized for hydropower, or by installing units at reservoirs not currently with hydropower as a project purpose.

In many cases, this situation resulted in a duplication of efforts, i.e., the Corps of Engineers and non-profit corporations studying the same project and both using federal tax monies. FERC's role in the process is to issue a study permit to non-federal entities and if the project is determined to be economically justified, FERC then issues a license for operation. Obviously, problems could occur when a non-federal entity is allowed to operate a portion of a project which clearly is under the jurisdiction of a federal agency, such as the Corps or the Bureau of Reclamation.

We strongly believe a multi-purpose reservoir with several authorized objectives should be operated by a single entity to maximize the utilization of the project. Further more, the federal agency which originally planned, constructed and now operates a project would seem the proper entity to effectively carry out this responsibility. Therefore, an effort by the NWRA to eliminate any duplication of effort would appear to be in the best interest of the nation's taxpayers.

EXHIBIT D

GERALD E. BORELLI, Chairman
EARL WALKER, Vice-Chairman
L.L. MALES, Secretary

ERNEST R. "Jack" TUCKER, Member
JOHN B. JARBOE, Member
JAMES H. NORICK, Member

R.G. JOHNSON, Member
RALPH G. McPHERSON, Member
BOYD STEVESON, Member

Thank you very much for the opportunity to provide our views and comments on this situation and should you have any questions, please contact either me or Mr. Rick A. Smith at the above listed telephone number.

Sincerely,

James R. Barnett
Executive Director

kgm

cc: R. G. Johnson

GUADALUPE-BLANCO RIVER AUTHORITY

MEMORANDUM August 13, 1981

TO: John Rosholt

FROM: John H. Specht, General Manager JS

SUBJECT: NWRA Testimony -- Synopsis of Proceedings Involving Development of Hydroelectric Power Potential at Canyon Dam and Reservoir in Comal County, Texas

In August 1980, members of the staff of the Guadalupe-Blanco River Authority attended a meeting in Austin, Texas, at which time the U. S. Army Corps of Engineers presented the National Hydroelectric Power Study and information received from the Electric Reliability Council of Texas which describe potential hydroelectric development within the waterways of Texas.

Following this meeting, the Authority developed a "Study Plan of Hydroelectric Power Generation Potential in the Guadalupe River Basin" for the purpose of providing a guide for future activities of the Authority in the development of energy resources of the river system. The study would be sufficiently broad to identify any possible source of energy production from the river and its storage reservoirs and it would provide such detail necessary to identify hydroelectric projects considered feasible for construction. Based upon the "Study Plan", the Authority entered into an engineering service agreement with Brown and Root, Inc., Consulting Engineers, in September 1980, to perform these preliminary studies.

On December 11, 1980, the Authority submitted an Application for a Preliminary Permit (Project Number 3865-000-TEXAS) at Canyon Dam and Reservoir in Comal County, Texas, to the Federal Energy Regulatory Commission. The Authority was informed in March 1981, that Mitchell Energy Company, Inc., (Project Number 3635-000), Continental Hydro Corporation (Project Number 3703-000) and ENAGENICS (Project Number 3966-000), all private developers and corporations organized under the laws of the State of Delaware and the District of Columbia, respectively, had filed Applications for Preliminary Permits at Canyon Dam. At this time, the Authority (the only local interest and investor in the Dam and Reservoir) was given 30 days to revise or supplement its application to reflect that the Authority was as well adapted or better adapted than all other applicants for the "best development of the resource".

EXHIBIT E

In May 1981, the Authority was informed that one of the private developers, Continental Hydro Corporation, had withdrawn its application.

On May 18, 1981, the Authority received a copy of Notice of Application for Preliminary Permit as published by U. S. FERC and that all Competing Applications and Comments, Protests or Petitions to Intervene must comply with all requirements and rules of the Commission and must be received on or before June 19, 1981.

On June 17, 1981, the Authority was given notice that the Pedernales Electric Cooperative, Inc., filed Petition to Intervene and would also submit a Competing Application.

On August 6, 1981, the Authority submitted to FERC a Response to Intervention and Competing Application of Pedernales Electric Cooperative.

The Authority was designated as a "local interest" by the U. S. Corps of Engineers, under Public Law 780 through contractual arrangements for construction and operation of Canyon Dam and Reservoir.

The pertinent provisions of Public Law 780 provide that the Chief of the Army Corps of Engineers "shall enter into an agreement" with local interests concerning hydro development at Canyon. He has done so. By contract dated September 20, 1957, Number DA-41-443-CIVENG-58-64, the Corps and GBRA agreed that:

> Should the (Guadalupe-Blanco River) Authority desire that facilities be provided at the Project for the development of electric power, such facilities may be constructed and operated by the Authority or the Government in accordance with the provisions of the Flood Control Act of 1954 approved September 3, 1954, (Public Law 780, 83rd Congress, 2nd Session) and all expenses of the construction, operation and maintenance of such facilities shall be paid by the Authority; provided, that plans for such facilities shall be subject to approval of the contracting officer prior to commencement of construction of such facilities, and further, provided that utilization of the water for the project shall not be allowed to conflict with flood-control and other Federal purposes of the project.

To date, the Authority has not received any indication from FERC that a Preliminary Permit is forthcoming or that it will be denied. The Authority has respectfully requested FERC to give consideration to the above Article of the U. S. Corps of Engineers contract as it relates to Competing Applications by private developers and electric cooperatives owned by shareholders.

PETITION TO UNITED STATES SENATE ENERGY COMMITTEE

. The undersigned, representatives of irrigation districts, municipalities and individual water users who receive irrigation water from the Yakima Reclamation Project, respectfully petition the Committee:

(1) to consider an amendment of the Federal Power Act, [16 USC 792, et seq. (herein the "Act")] which would prohibit the Federal Energy Regulatory Commission (herein "FERC") from issuing preliminary permits and licenses for the construction of hydroelectric projects on existing irrigation facilities constructed by the United States for the use and benefit of some landowner-water users (herein "landowners") within the Yakima Reclamation Project (herein "project") to any entity not acting for the benefit of all project landowners who wish to be involved in project hydropower development."

The cost of constructing the existing dams on storage reservoirs in the project [commonly known as "joint use facilities" (herein "facilities")] has been or is being repaid to the United States by project landowners for whose benefits the facilities were constructed. The Act and related administrative regulations ignore and irreparably damage the vested, beneficial ownership and interest of project landowners in existing facilities. FERC's present licensing procedure permits individuals and entities who have no legal or beneficial interest in the facilities or the project's primary purpose of supplying irrigation water, to obtain hydro development license priority on existing project facilities simply by a priority application filing. The filing priority is, under current FERC regulations, difficult if not impossible to overcome. The present FERC licensing practice results in an absolute denial to project landowners of substantial revenue potentially available from project facilities constructed, maintained and operated at their cost and for their sole benefit.

There is and has been an urgent need to modernize existing irrigation water delivery-distribution systems and to construct additional storage facilities in the Yakima River Basin to satisfy the United States irrigation water delivery obligations required by its contracts with project water users and to maintain minimum fish flow within the basin.

EXHIBIT F

The United States has not constructed any new irrigation water storage facilities since the completion of Lake Cle Elum Dam in 1933 and, at present, it does not appear federal funds will be available in the foreseeable future for the construction of new facilities.

The operation of hydroelectric projects constructed on presently existing dams beneficially owned by project landowners would provide revenue which would permit the landowners to begin modernization of distribution systems and the expansion of storage facilities in the Yakima Basin without the use of federal funds.

The Act and FERC, by permitting and even encouraging preemption of project landowners from development of existing irrigation facilities have rendered further landowner development of the project virtually impossible.

The undersigned request this Committee consider legislation:

(a) To limit the issue of preliminary permits and licenses by FERC to existing irrigation districts, joint ventures of irrigation districts or entities acting for the benefit of project landowners who desire to develop hydroelectric capacity on their present beneficially owned facilities; and,

(b) Amending 16 USC 803(c) to provide an exemption from the imposition of annual charges payable to the U.S. by licensees per 16 USC 792, et seq., to the extent power sale revenues by the licensee are devoted to the acquisition or construction of sites and facilities providing additional water for reclamation, irrigation and fishery enhancement; and,

(c) Enact legislation prohibiting the Interior Secretary from adopting administrative regulations per 43 USC 485h(c) establishing a "falling water charge" for hydroelectric power produced at facilities constructed pursuant to the reclamation Act if the licensee is an irrigation district, joint venture or organization composed of irrigation districts which have repaid or are obligated by contract to repay all or a portion of the construction, operation and maintenance costs of the facilities on which the project is located; except to the extent a charge comparable to the "falling water charge" shall be applied as a credit against the district's contractual obligations to pay construction, operation and maintenance charges to the United States.

Respectfully submitted:

____

QUINCY COLUMBIA BASIN IRRIGATION DISTRICT
TELEPHONE 787-2316 • POST OFFICE BOX 188
QUINCY, WASHINGTON 98848

August 14, 1981

Mr. James Watt, Secretary
Department of Interior
Washington D. C. 20240

Dear Secretary Watt:

I am enclosing an editorial which appeared in the Wenatchee Daily World newspaper in this last weekend edition.

It states the facts very clearly and gives the feelings of the three Columbia Basin Irrigation Districts. There is more I could add but I believe the main concerns are well given.

I am the General Manager of the Quincy-Columbia Basin Irrigation District. The Quincy District has some sites they are considering, in fact we are just presently submitting our Application For License on an 8 megawatt site. It is in the 5 to 6 cents class that Mr. Woods referred to in his article.

The three Basin districts are working together on all power sites irregardless of their location. We share the costs and the revenue based on a formula which is derived from the amount of irrigation water each delivers.

I'm writing this letter in behalf of the Reserved Works Committee of which I am Secretary. This committee is composed of two directors appointed annually from each district. We have two regular meetings each year at which time the committee sits down with the District's managers and attorneys and representatives from the Bureau of Reclamation to discuss mutual problems and operational plans.

We are new at the power business but old hands at the irrigation job. Our first power plant will be dedicated this Saturday. It has been a good learning process for all concerned and it appears to be a success.

We are hoping the rest of the plants will "move right along" and be producing the much needed kilowatts. We do not feel we are greedy in wanting all the revenues since there is no extra money or labor being expended by the government in creating this power. The Districts have their necks on the line and we're taking full responsibility for construction and operation of these plants. We feel they are a great asset to the country and although they aren't big producers, they are sending out power and there's no smoke or contaminates to worry about. We, and others, can use the same water over and over without wearing it out.

EXHIBIT G

In closing, I would like to urge you to use your office and wisdom to settle this proposed power revenue sharing plan and let the irrigation districts get on with their power development plans. Without the realization of the full revenue, it will remove a lot of the incentive to proceed.

Yours very truly,

Tom Cotton

Tom Cotton, Secretary
Columbia Basin Reserved
Works Committee

TC:dd

cc: Chan D. Bailey, Manager, East District
Richard Lemargie, Attorney, East District
Russell Smith, Manager, South District
James Leavy, Attorney, South District
Russell Wentworth, President, Quincy District
John W.Baird, Attorney, Quincy District
William Lefler, V. Pres., Quincy District
Richard Stevens, Director, Quincy District
Edward Spalding, Director, Quincy District
Curtis P. Smith, Director, Quincy District
Melvin Stepon, Director, Quincy District
Commissioner Robert Broadbent, Dept. of Interior
Mr. John Rosholt, Twin Falls, Idaho
Senator Henry Jackson
Senator Slade Gordon
Representative Thomas Foley
Representative Sid Morrison
Jim Cole, Manager, USBR, Ephrata
Senator James McClure
Wilfred R. Woods, Editor, Wenatchee Daily World
Edward Ker, Director, Quincy District

The Wenatchee World
Established July 3, 1905
WILFRED R. WOODS, Editor and Publisher
Robert W. Woods, Executive Editor
PAGE FOUR
SUNDAY, AUGUST 9, 1981

Encourage hydro by dropping tax

By STEVE LACHOWICZ
Editorial Page Editor

With controversial coal and nuclear power plants being built at exceedingly high cost, it seems incredible the federal government would want to discourage further production of clean, safe, relatively cheap hydro power.

Yet discouragement is the net effect the federal government's proposed power tax will have on plans by the three Columbia Basin irrigation districts to build and operate their own electric generating plants on the irrigation canal system. Some irrigation district managers go so far as to say some of the more marginal projects won't even be constructed if the contemplated federal tax of 50 percent of power profits is upheld.

The government's claim is that it has made the water available in the first place by building Grand Coulee Dam and the irrigation system. The government therefore feels it deserves a share of any money to be made from selling electricity generated with that water.

The irrigation districts point out they have done all the work on constructing the generating plants. They also say their repayment contracts with the federal government provide that all revenues are to remain within the districts. The money from sale of the electricity (to Tacoma and Seattle utilities under a 40-year contract) would go back into reducing assessments for irrigation water users, financing other power developments, financing new irrigation facilities so more land can be made productive and for rehabilitation of existing irrigation district facilities. It seems reasonable to leave the money where it will do further good for agriculture instead of siphoning it off into the foggy federal bureaucracy.

The issue is currently in the hands of the Federal Energy Regulatory Commission (FERC) which is expected to rule on a license for the proposed Summer Falls project (the biggest, at 80 megawatts, of any so far planned) in September. That license will make clear whether any federal tax is to be imposed or not. If there is a tax, the irrigation districts will likely take the issue to the federal courts.

It's true the federal government provided the water in the first place, but it's the irrigation districts which have worked hard to develop the raw resource. Without the work done by the districts there would be no power generating projects at all. What good would that be to anybody?

The Reagan administration is big on incentive. What better incentive for further hydro power generation than letting the irrigation districts reap the benefits from their hard work engineering, financing and building the power plants? What better way to encourage further development of dozens of other hydro sites still untapped on irrigation canals?

The electricity to be gained may not be on the scale of a nuclear or a coal plant. The six projects now on the drawing boards total just over 110 megawatts compared with the 1,250 megawatts of an average nuclear or coal plant. But the costs are still a lot better. The first project coming on line this month will offer electricity for roughly 2-2¼ cents per kilowatt hour. The maximum for the other five plants is estimated at 5-6 cents. In comparison, the Chelan County PUD now gets roughly 1¼ cents per kilowatt hour. The projected costs of WPPSS nuclear power range all the way from 5 to 17 cents, depending who you ask.

Electricity from irrigation canals is cheaper and cleaner than any other alternative besides conservation. The federal government should be doing all it can to encourage its development. In the long run the benefits of boosting further hydro development will far outweigh any money the government could get from these small hydro projects. Forget this power tax.

EXHIBIT H

[illegible]

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

JOHN V. EVANS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

October 13, 1981

John Rosholt
Idaho First Nat'l Bank Bldg.
P. O. Box 1906
Twin Falls, ID 83301

Dear John:

Enclosed is a position paper adopted by the Association of Western State Engineers (AWSE) at their recent annual meeting. The AWSE is an organization of the state engineers of the 19 western states. They represent the agencies responsible for administering the water laws of the western states. I represent Idaho as a member of the AWSE.

The position of the association is that the hydro authority of FERC to regulate and license intrastate hydro facilities should be repealed.

I believe the repeal of FERC's authority in the licensing of intrastate hydro facilities will reduce costs, reduce delay and allow state's to regulate their resources without federal interference. This appears to be one opportunity to eliminate a federal function with little if any adverse impact.

The enclosed position paper is a draft of the paper adopted but I believe it reflects the changes made in adopting the final position.

Sincerely,

A. KENNETH DUNN
Director

AKD:alw
Enc.

EXHIBIT I

POSITION PAPER NO. 3

REPEAL OF FERC

One purpose for the establishment of the Federal Energy Regulatory Commission (F. E. R. C.) was to prevent the construction of excess hydro-electric energy capacity. Control of energy capacity to avoid over-production at one time was a valuable role in regulating utilities.

The energy demand of the nation has dramatically changed. The need to control hydro-power development for the purpose of over-production has been eliminated. Congress has recently taken action to encourage additional hydro-power development, and the nation is seeking opportunities to reduce unnecessary government regulation.

The states have available the necessary authority to determine the need and to adequately regulate hydro-power facilities within their boundaries. The role of the federal government through ~~the~~ FERC has been modified by the changed energy needs of the nation.

The needs of the nation to increase energy production and reduce unnecessary government regulation and the burden of excessive costs requires an appraisal of the opportunities to eliminate unnecessary government.

The Assocation of Western State Engineers urges the Congress and the President of the United States to repeal the authority of ~~the~~ FERC to regulate the development and licensing of intra-state hydro-power facilities. Had position

Adopted this 25th day of September, 1981

ASSOCIATION OF WESTERN STATE ENGINEERS

Dee C. Hansen, President

State of Idaho

The State Water Plan

PRELIMINARY

Idaho Water Resource Board

December 1981

EXHIBIT J

1.5 MW in size, a shorter, less detailed application may be submitted. The Federal Energy Regulatory Commission carries out a substantive review of all applications received. This review includes an analysis of environmental impacts, engineering feasibility and economic feasibility. In addition, opportunity is given for the public or other agencies to comment, protest, intervene or submit competing applications. This process insures that infeasible projects or projects with severe negative environmental impacts will not be undertaken. The process does not, however, include an analysis of the desirability of a proposed project with respect to optimum use of the resources in a given area of the state. No such analysis is currently carried out by any agency.

The role of state government in analyzing proposed hydropower projects with respect to optimum resource use should be clearly indentified for the benefit of developers, reviewing agencies and the general public. The Idaho Water Resource Board is the consititutional water agency in the state which is responsible for the optimum development of water resources in the public interest. In addition, it is the statutory duty of the Board to progressively formulate an integrated, coordinated program for conservation, development and use of all unappropriated water resources of the state. In adopting such a program, the Board shall integrate and coordinate use of water to achieve optimum development in the interest of and for the benefit of the state as a whole. To insure that the public interest is recognized in decisions concerning proposed new or enlarged hydropower plants, the following policy should be adopted:

PROPOSED POLICY 42

HYDROPOWER SITING

It is the policy of Idaho that a State siting process be establised for hydropower development to ensure that the public interest is recognized.

Policy Issue - FERC LICENSING

The Federal Energy Regulatory Commission currently licenses all hydroelectric projects in the nation. Many of those projects are wholly within the states and do not involve controversial or objectionable aspects. A more efficient and effective licensing process could be developed if the Federal Energy Regulatory

Commission would transfer the administrative process of licensing for projects wholly within a state to the states.

The State, through its various departments, is experienced in conducting analysis and review of projects to determine their merits. The Idaho Department of Water Resources currently receives all applications for utilizing the state's water for any activity. At the time an application for water for a hydroelectric project is submitted, additional information could be provided to secure a hydropower license. The basic elements of the license should stay the same in terms of study detail, timing, and limitations. Projects that are clearly interstate in nature should remain under the regulatory authority of the Federal Energy Regulatory Commission. To provide for maximum state control over water resources and to allow greater efficiencies in water resource allocation decisions, Idaho should adopt the following policy:

PROPOSED POLICY 43

FERC LICENSING

It is the policy of Idaho that, for projects wholly within the state, or unless there is a Congressionally authorized project with overriding national interest, FERC should defer to state water management authority all water resource aspects of hydroelectric project licensing.

Policy Issue - JOINT STATE-FEDERAL HYDROPOWER DEVELOPMENT

The Bureau of Reclamation and the Army Corps of Engineers have constructed several dams and reservoirs in Idaho. Some of these projects include electrical generation as a basic use of water. However, some do not have electrical generation facilities.

Previous studies on development for electrical generation have been done by the various state and federal agencies. However, a cooperative program leading to implementation has not been considered. Idaho should investigate the potential of cooperatively developing the hydroelectric potential at federal facilities thereby making additional energy resources available to the citizens of Idaho.

The federal government is agreeable to the development of hydropower by non-federal entities provided that hydroelectric development is found to be compatible with the purposes for which Congress authorized the existing project, and that federal hydroelectric facilities have not been authorized by Congress for construction.

The state and the federal government should sign an agreement assuring that non-federal applications for development of hydro potential on the canals, dams or other features of federal water projects will receive timely and proper consideration.

Disagreements as to federal authority and policy have burdened private and other non-federal interests wishing to develop hydroelectric plants on existing federal works. A cooperative agreement will resolve conflicts which otherwise might take new legislation or result in litigation.

The proposed memorandum of understanding should provide for a continuing review of the methods by which a reasonable annual charge may be assessed for falling water provided by federal projects. It should also provide that non-federal developers be required to clear their plans with federal agencies to ensure that no conflict with existing project purposes will arise.

Therefore, Idaho should adopt the following policy:

PROPOSED POLICY 44

JOINT STATE-FEDERAL HYDROPOWER DEVELOPMENT

It is the policy of Idaho that the state should enter into cooperative programs with the Bureau of Reclamation and the Army Corps of Engineers to provide for the full development of hydroelectric generation potential at the existing federal dams and reservoirs within the State.

Senator HUMPHREY. Thank you.
Mr. Baird?

STATEMENT OF JOHN W. BAIRD, ATTORNEY, QUINCY-COLUMBIA BASIN IRRIGATION DISTRICT

Mr. BAIRD. Mr. Chairman, my name is John Baird. I am an attorney for the Quincy-Columbia Basin Irrigation District in the State of Washington.

The Quincy district is one of three irrigation districts that comprise the Columbia Basin project. Presently it is a Federal reclamation project, one of the largest, presently serving irrigation water to approximately 600,000 acres, with another 400,000 acres to go.

As a result of the construction and the operation of the irrigation facilities of the Columbia Basin project, there are certain facilities which were constructed by the United States through the Bureau of Reclamation which at the time of construction there was no thinking of the eventual power involved. These facilities were constructed 30, 40 years ago. The usual situation is where there is a substantial drop in a canal which now because of our need for energy makes it feasible to develop these sites.

We also have a great concern with these hybrid filings which many of the previous witnesses mentioned. Out in the West we call them shotgun filings, and the developers are even using a modified shotgun for greater coverage. They have filed on sites that we already have been issued a preliminary permit by FERC. They have filed on sites where there is absolutely no chance of development, and they have filed on some of our sites where there may be a possibility of a viable development, and this concerns us seriously because we have got 12 to 18 which are now under consideration. We wish to develop those in an orderly manner, and time requirements are making it almost impossible for us to keep ahead of these shotgun filings.

I certainly sympathize with the FERC people. Mr. Rosholt suggested a $5,000 fee. I would most heartily agree. It should be nonrefundable. I think this would alleviate a lot of these filings on a nonviable site, on sites that have already been filed on and so forth. It is a real problem, and I am sure that that will be looked into quite closely.

As has been stated here before, lowhead hydro is capital intensive, and for instance, on our first site which was just recently completed and is now in the testing stage, 6 megawatts, the cost is over, a little over $7 million to the district. The incentive to the district is approximately one-half of 1 percent, approximately $35,000 a year to the district per year. This goes on for a period of approximately 25 years.

The Federal Government acting through the Bureau of Reclamation and the Department of the Interior now seems to have a real program on to charge the irrigation districts a net benefit charge equal to 50 percent, a Federal site charge equal to 50 percent of the net benefit to the district.

As I previously stated, our net benefit is about one half of 1 percent. If the Federal Government through the Bureau of Reclamation receives one half of that, that reduces our incentive to one quarter of 1 percent which substantially takes away the initiative.

On our first site, the Russell D. Smith plant, no charge was proposed by FERC primarily on the basis that the districts were paying part of construction and that we have all of the costs of operation and maintenance which is approximately $10 million a year. There appears to be a jurisdictional dispute between FERC and the Department of Interior which I think is going to have to be addressed. As I said, the first site, no Federal charge; the second site, subsequent to a Memorandum of Understanding between FERC and the Bureau of Reclamation in May and June of 1981, they came out with a possible site charge not to exceed 50 percent of the net benefit. It is obvious to us that a Federal site charge for the use of a drop in the canal is going to be imposed.

This makes it tremendously difficult for the irrigation districts to plan our financing or sale of the power, and it makes it difficult even to determine whether or not to proceed. We don't know whether the charge is going to be $1 because FERC does not say it is going to be 50 percent, but not to exceed 50 percent. We believe that the Bureau is pushing for 50 percent, so we don't know how much it is going to be. It is making it almost impossible for us to proceed to negotiate with power purchases, financial planning and so forth.

In the case of irrigation districts which pay for the cost of a portion of the construction of the project, and they are paying for all of the operation and maintenance, and because of the capital-intensive nature of lowhead hydro, we certainly believe that it detracts from the incentive of irrigation districts which are in a good position to develop lowhead hydro, and we sincerely believe that incentives for the imposition of a Federal site charge is unproductive.

Thank you.

[The prepared statement of Mr. Baird follows:]

QUINCY-COLUMBIA BASIN IRRIGATION DISTRICT
TELEPHONE 787-2316 • POST OFFICE BOX 188
QUINCY, WASHINGTON 98848

October 19, 1981

STATEMENT TO THE SENATE ENERGY & NATURAL RESOURCES COMMITTEE

Subcommittee on Water & Power
Subcommittee on Energy Regulation

Gentlemen:

In re: Hydropower Resource Development
and Federal Energy Regulatory
Commission Licensing Procedures

The following testimony is jointly submitted for the record by East, South and Quincy-Columbia Basin Irrigation Districts.

I.

BACKGROUND

Said East, South and Quincy Districts are the three irrigation districts comprising the Columbia Basin Project, one of the major reclamation projects constructed by the United States acting through the Department of Interior and the Bureau of Reclamation. Approximately 600,000 acres of formerly arid lands are presently being irrigated with water made available from the Project facilities, the first water becoming available in the early 1950's.

In 1968, the major portion of the irrigation facilities constructed by the United States was transferred to the Project irrigation districts for operation and maintenance and those costs are now paid solely by the landowners of the irrigation districts. The annual operation and maintenance costs of the three Project districts for irrigation purposes total approximately $10,000,000.00.

As the result of the construction of Project works and the annual operation and maintenance of the irrigation facilities, certain canal sites exist capable of utilization for the production of low-head hydroelectric energy during the irrigation season. Approximately twelve sites on the Project are presently being developed and are in various stages of feasibility investigations, licensing and construction. The first of these plants, the Russell D. Smith Power Plant, capable of producing approximately 6 megawatts of power during the irrigation season, was recently completed and is now in the testing period. The estimated total power production of the power sites presently being developed and under active investigation is approximately 150 megawatts and other sites are being considered.

While low-head hydro power development is capital intensive and the net benefit to the districts is relatively small in comparison to the amount invested, the Project irrigation districts have heretofore determined to proceed with low-head power development primarily because of the region's growing shortage of electric energy and the need for the development of renewable, non-polluting resource development.

II.

AREAS OF CONCERN

A. "Shotgun" Filings on Power Sites

The first area of concern which the districts would like to call to your attention involves "shotgun" filings by various corporations and/or individuals on possible power sites.

As above stated, the Project irrigation districts are presently in the process of developing approximately twelve power sites. Each development requires voluminous time and attention. Additional sites exist on Project canals and waterways and it is the present intention of the districts to develop each and every viable site. Such development must be accomplished in an orderly manner with meticulous care and attention to each proposed site.

Recently, however, various private corporations have commenced filing "shotgun" applications on Project power sites, viable or otherwise, with FERC. Applications have even been filed on sites on which FERC has already issued preliminary permits to the districts. It is our understanding that this practice of filing on innumerable prospective power sites, without investigation as to other filings or the viability of the sites, is country-wide and not limited to the Columbia Basin Project.

The Project irrigation districts have been more than pleased with the cooperation and assistance that they have received from the Federal Energy Regulatory Commission and its staff in the processing of the applications filed by the districts. However, it is our understanding that the recent filings of many hundreds of applications is seriously impacting FERC's ability to adequately and expeditiously process the legitimate filings. Said "shotgun" filings are further hampering the Project districts in their efforts to fully develop all viable power sites in an orderly manner.

The districts therefore would like to suggest that appropriate legislation be considered that would eliminate the present practice of shotgun filings which are seriously affecting FERC's ability to efficiently process legitimate applications. In addition, it is also suggested that public bodies, such as irrigation districts, that have the responsibility of operating and maintaining a particular waterway or canal system be given a preemptive right to develop the viable power sites within their jurisdiction provided that such development is undertaken within a reasonable time.

B. Proposed Federal Site Charge or Charge For Use of Government-Owned Property

Of even more serious concern to the Project's hopes for the continued development of low-head power is the threat of the imposition of a federal site charge. It is apparent that the Department of Interior is urging the Federal Energy Regulatory Commission to impose a charge for the use of government-owned property (for instance, an irrigation canal) in an amount equal to 50% of the "net benefit" to the districts for a particular power plant.

For example, the Russell D. Smith Power Plant constructed by the districts cost slightly in excess of $7,000,000.00. The annual net benefit to the districts, based upon the amount of power to be produced, is $37,000.00. This amount represents an annual return to the districts on their investment of slightly more than one-half of one per cent. If a federal site charge had been imposed of 50% of the net benefit, the districts' return on funds invested would be reduced to one-quarter of one per cent.

Fortunately, FERC saw fit not to impose a federal site charge on the Russell D. Smith Power Plant. The License was issued on March 27, 1980. No charge was imposed, partly for the reason that the districts were already paying for a portion of the irrigation system construction costs and for all of the system's operation and maintenance costs. While Interior vigorously protested the action of FERC, it did not pursue the appeal procedures available to it. Interior takes the position that a federal site charge should be imposed under Section 10(e) of the Federal Power Act while FERC maintains that the imposition of a federal site charge is within its jurisdiction after considering all circumstances existing as to a particular development.

The jurisdictional dispute between Interior and FERC has not been resolved as to the federal site charge issue. Subsequent to the dispute as to the site charge on the Russell D. Smith Power Plant, a Memorandum of Understanding was entered into by the Chairman of the Federal Energy Regulatory Commission and the Commissioner of the Bureau of Reclamation pertaining to joint participation in non-federal hydro power development. Matters agreed to were the approval of plans and drawings, Project access, and use of lands administered by the Bureau of Reclamation. This Memorandum of Understanding was signed by the Chairman of the Federal Energy Regulatory Commission on May 22, 1981 and by the Commissioner of Reclamation on June 22, 1981. While the Memorandum of Understanding settled certain issues of concern between the two agencies, their disagreement as to the imposition of a charge for the use of government facilities was not finalized. The Memorandum of Understanding with respect to an annual charge for the use of government facilities provided that the Commission and the Bureau of Reclamation would continue to review the annual charge issue in an effort to develop a generic methodology for a reasonable annual charge to be assessed for the use of Bureau of Reclamation facilities.

Subsequent thereto, on August 14, 1981, FERC issued to the Project irrigation districts a license to construct the Summer Falls Project No. 3295. With respect to the subject of an annual charge for use of government property, the Summer Falls license issued by FERC provided that a final determination of the annual charge for the use of government property at the Summer Falls Project would be reserved for later determination but would not exceed 50% of the net benefit to the districts. In the case of the Summer Falls Project, the annual net benefit to the districts is slightly less than one-half of the one per cent on their funds invested to construct the plant.

Obviously, the jurisdictional dispute between the Federal Energy Regulatory Commission and the Department of Interior has not been resolved. It is further obvious that the uncertainty of the imposition of the charge, if any, and the amount thereof makes it very difficult for the Project's irrigation districts to finalize its determination as to the feasibility of a particular project and to consummate contracts for sale of the power to be generated to prospective purchasers.

It is suggested that the above-mentioned jurisditional dispute between the Federal Power Commission and the Bureau of Reclamation would be a proper subject for the Committee to consider as to whether legislation to remedy the dispute would be beneficial.

C. Arguments Against A Federal Site Charge On Projects Developed By Irrigation Districts

In general, irrigation districts operating facilities constructed by the United States are repaying to the federal government a portion of the cost of construction of the Project and in addition pay 100% of the annual costs of operation and maintenance. As heretofore pointed out, the Columbia Basin Irrigation Districts expend annually $10,000,000.00 for operation and maintenance of the system. Such expenditures are necessary to preserve the integrity of the system and the investment of the United States in the Project and such annual expenditures further make possible the continued availability of water for the operation of low-head hydro plants.

The justification for a reasonable federal site charge can be rationalized if the developer of the power site is an entity other than an irrigation district. In such a case, the third party developer would have the benefit of federal construction and the annual operation and maintenance by an irrigation district. One is as important as the other, i.e., a power site would not exist without both construction and annual operation and maintenance.

It can logically be argued that, in the case of power development by a third party, if the United States is entitled to a federal site charge of 50% of the net benefits, the irrigation district furnishing the annual operation and maintenance should also be entitled to impose a similar charge.

It is therefore suggested that inasmuch as irrigation districts are repaying a portion of the cost of construction and all of the annual costs of operation and maintenance, and the return to an irrigation district is nominal compared to the funds invested and the risks involved, a federal site charge should not be imposed against irrigation districts which are willing to construct capital intensive low-head hydro facilities.

III.

SPECIFIC CONTRACTUAL REASONS AGAINST IMPOSITION OF FEDERAL SITE CHARGE ON THE COLUMBIA BASIN PROJECT

A. 1945 Repayment Contract Between the United States and Columbia Basin Project Irrigation Districts.

In 1945, pursuant to applicable federal and state reclamation laws, the United States, acting by and through the Secretary of Interior, and the Bureau of Reclamation entered into repayment contracts. Those initial repayment contracts provided for the construction, operation and maintenance of the Columbia Basin Project and established the respective rights, duties and obligations of the parties to the contracts.

The initial 1945 repayment contracts generally provided that the United States would construct the necessary facilities to irrigate the arid lands within the Columbia Basin Project and perform the operation and maintenance of the irrigation system so constructed, and that the landowners, acting through the districts, would repay to the United States the costs of operation and maintenance of the irrigation system and a contractually agreed upon portion of the cost of constructing the project.

With respect to the production of power, Article 33 of the 1945 contracts provided:

> "All revenues from the use of power plants (built as a part of the Columbia Basin Project, including any plants built in connection with the irrigation system) and from the use, sale or other disposal of power and energy in any form shall be and remain the property of the United States."

B. 1968 Amendatory Repayment Contracts Between The United States and the Columbia Basin Project Irrigation Districts

In 1968, after many years of negotiations, the United States and the districts entered into a complex document consisting of some 97 pages. This contract is generally referred to as the December 18, 1968 repayment contract and culminated in the transfer of the responsibility for the operation and maintenance of constructed irrigation facilities to the districts. One of the important areas of negotiations concerned the rights of the districts to construct and operate power plants and to retain all of the revenues therefrom. Those negotiations resulted in Article 55 of the 1968 repayment contract which replaced Article 33 of the initial 1945 repayment contract. Article 55(b) of the 1945 repayment contracts read as follows:

> "55(b). With the prior approval of the Secretary, the District either alone or in conjunction with the other districts, may build plants for the production of power and energy and structures and facilities necessary for the operation of such plants and all such plants shall be and remain in the exclusive control, possession, and ownership of the District

> or districts. All revenue from such power-plants and from the use, sale, or the disposal of power energy therefrom shall be and remain the property of the District or districts." (Emphasis added.)

Prior to the approval of the 1968 repayment contract, the proposed contract was approved by the Bureau of Reclamation and forwarded to the Secretary of Interior for review. On November 29, 1968, the Secretary approved the contracts with the districts containing Article 55(b) and on December 18, 1968, the United States, acting through the Secretary of Interior, and the districts executed the contracts. Since that date, the contractual provisions of the 1968 repayment contracts have governed the relationship of the parties with respect to the Columbia Basin Project.

C. Specific Arguments Against Imposition of Federal Site Charge

(1) The 1968 repayment contract is a binding, enforcible contract between the United States and the districts. Its Article 55(b) entitles the districts to retain all of the revenues from hydroelectric projects developed by them on the Columbia Basin Project irrigation system. It should be pointed out that the hydroelectric projects developed by the districts are constructed without cost or expense to the United States.

(2) The 1968 repayment contract is between the United States and the districts. Article 55(b) provides that the districts may build hydroelectric generating facilities and that all revenue from such facilities shall be and remain the property of the districts. This provision is a clear relinquishment of the United States of any claim it might have under Section 10(e) of

of the Federal Power Act or any other statute to revenues from such facilities.

(3) The 1968 repayment contract does not state that the districts may keep the net revenue or the revenue remaining after the United States has collected an annual site charge. It states that the districts are entitled to keep all revenue. The United States, as one of the contracting parties, may not diminish the districts' revenue by attempting to impose an annual site charge against low-head hydro facilities constructed by the districts without cost or expense to the United States.

(4) Article 55(a) states that the United States may build hydroelectric generating facilities and that "all revenues from such power plants and from the use, sale or other disposal of power and energy therefrom shall be and remain the property of the United States". As above set forth, Article 55(b) provides that if the districts build the power plants, the districts would be entitled to all revenue from such power plants. It would be anomalous to construe what were clearly intended to be parallel contractual provisions to mean that if the United States developed the facilities, it could keep all revenues but if the districts developed the facilities, the districts would first have to pay a substantial sum, such as 50% of the net benefits, to the United States.

(5) The irrigation districts are municipalities existing under and operating pursuant to state irrigation and federal reclamation laws. All revenue received by them must be used for municipal purposes and none of their revenues may be

distributed to private parties. Revenues received by the districts from their operations will be utilized to reduce their indebtedness, pay operating and maintenance expenses, and provide for improvements and betterments to the irrigation system, all of which will enure to the benefit of the United States in the preservation of the irrigation system as an efficient operating system and for the long-term enhancement of the original investment of the United States in the system. It should be noted that many of the irrigation facilities of the districts were constructed thirty years ago and that extraordinary maintenance expenses can now be anticipated. A reduction in the districts' financial ability to properly maintain the integrity of the system would not be in the best interests of the districts or the United States.

IV

SUMMARY OF TESTIMONY

A. Congress should take such action as now appears necessary to expedite the administrative handling of applications for the construction of the renewable resource hydroelectric generating facilities, including the prevention of "shotgun" filings which are unduly hampering the Federal Energy Regulatory Commission in its administrative functions.

B. Congress should take such action as necessary to provide that a federal site charge would not be imposed by its administrative agencies against irrigation districts which are attempting to develop low-head hydroelectric facilities, without cost or expense to the United States, and which the districts are already repaying to the United States a portion of the construction cost of a Project and the full costs of the operation and maintenance of the irrigation system.

C. Congress should encourage its administrative agencies to adhere to the contractual commitments heretofore made by the United States relative to the imposition of a federal site charge on irrigation facilities of federal reclamation projects being developed for low-head hydroelectric generation. Specifically, in the case of the Columbia Basin Project, the contractual provisions of Article 55(b) providing that the districts would be entitled to all revenue from such power plants should be honored.

D. In the event it is determined that a federal site charge is to be levied, Congress should take such action as to assure the reasonableness of the charge (as contrasted to a charge equal to 50% of the net benefit received by a district from the power production) and should further provide that such a charge would not be imposed if "otherwise provided by law or contract".

Respectfully submitted,

QUINCY-, SOUTH AND EAST COLUMBIA
BASIN IRRIGATION DISTRICTS

By:
John W. Baird, Secretary-Attorney
for Quincy-Columbia Basin Irrigation District

Senator HUMPHREY. Thank you. Ms. Gould.

STATEMENT OF JOYCE GOULD, DIRECTOR, SUNNYSIDE VALLEY IRRIGATION DISTRICT

Ms. GOULD. My name is Joyce Gould. I am serving as one of the five directors responsible for operation of the Sunnyside Valley Irrigation District serving 84,000 acres of the 103,000 irrigated acres contained in the Sunnyside division of the Yakima project.

I will preface my remarks and recommendations with a short history of our project. The Yakima project, located in south central Washington State, is in a semiarid climatic zone, averaging 7.8 inches of rain per year. The diversified farm commodities produced on the 500,000 acre Yakima project including apples, hops, grain, mint and livestock, as well as many other annual and perennial crops, cannot be grown without a continuous, reliable supply of irrigation water during the 195-day growing season from April to October, especially when the natural flow of the Yakima River is low in June, July, August, and September. A project map with additional information on the reverse side is attached to this statement.

Our recommendations would be to limit the Federal Energy Regulatory Commission, FERC, issuance of preliminary permits and licenses on power sites utilizing existing or prospective reclamation irrigation facilities to the irrigation districts which have an actual or beneficial interest in the facility.

Second, to provide by amendment of 16 U.S.C. 803(e) an exemption of irrigation district licensees from the imposition of an annual charge or charges to the United States if power sale revenues received by an irrigation district are devoted to the acquisition, construction, or maintenance of sites and facilities providing additional water for irrigation, fish, or recreation, and third, to prohibit the Interior Department from adopting any administrative regulations imposing, and I quote, a "falling water" unquote, or other charges for hydroelectric power produced at facilities constructed pursuant to the 1902 Reclamation Act if the licensee is an irrigation district or combination of irrigation districts which have repaid or are obligated by contract to repay all or a portion of the construction, operation, and maintenance costs of the facilities on which the hydro power project is located.

I understand the FERC has to date excluded project irrigation districts and granted a preliminary permit on five existing project facilities—Cle Elum Dam and storage, Kachees Dam and storage, Keechelus Dam and storage, Easton Diversion Dam, and Roza Diversion Dam—to a nonproject entity, Kittitas PUD; also on Rimrock Lake storage to a nonproject entity, the city of Tacoma.

In my conclusion we find the needed additional storage facilities and modernization of existing distribution-delivery systems and the cost to be prohibitive to us unless we have additional revenues from some source. We feel that the moneys if we are going to continue to have the water to serve our project, the moneys will have to come from sources other than just farm related. The Federal Government has not provided any new storage in the Yakima watershed since 1933 when the dam was built. We are now in much litigation over water rights and treaty rights for the Indians.

We feel the revenue would be very helpful and it is indeed needed to construct more storage facilities.

We feel we cannot do this alone, that it will take the Federal Government, the local, State, and every effort. This seems to be to me an ideal opportunity for extra funds for our purposes.

I further request to the committee that your subcommittee consider conducting field hearings in central Washington in order that other irrigation districts might be able to appear to give testimony to your committee, and with the permission of you, Mr. Chairman, I would like to conclude my remarks and defer to Mr. Robert Campbell as special counsel to Sunnyside Valley Irrigation District on Hydro Development, if I may have your permission.

[The prepared statement of Ms. Gould follows:]

Statement by
Joyce Gould, Director
Sunnyside Valley Irrigation District

Presented: 10/19/81

To: U.S. Senate Power & Water Sub Committee.

My name is Joyce Gould. I am one of five directors responsible for operation of Sunnyside Valley Irrigation District ("SVID") serving 84,000 acres of the 103,000 irrigated acres contained in the Sunnyside Division of the Yakima Project ("Project").

The Yakima Project, located in South Central Washington State, is in a semi-arid climatic zone, averaging 7.8 inches of rain per year. The diversified farm commodities produced on the 500,000 acre Yakima Project including apples, hops, grain, mint and livestock, as well as many other annual and perenial crops cannot be grown without a continuous, reliable supply of irrigation water during the 195 day growing season from April to October, especially when the natural flow of the Yakima River is low in June, July, August and September. A project map with additional information on the reverse side is attached to this Statement.

1. RECOMMENDATIONS:

Congress should consider and approve legislation:

(a) To limit Federal Energy Regulatory Commission ("FERC") issuance of preliminary permits and licenses on power sites utilizing existing or prospective reclamation-irrigation facilities to the irrigation districts which have an actual or beneficial interest in the facilities; and,

(b) To provide by amendment of 16 USC 803(e) an exemption of irrigation district licensees from the imposition of annual charges payable to the U.S. (16 USC 792, et seq.) if power sale revenues received by an irrigation district are devoted to the acquisition, construction or maintenance of sites and facilities providing additional water for irrigation, fish or recreation; and,

(c) To prohibit the Interior Department from adopting any administrative regulations [e.g. 48~~7~~ USC 485h(c)] imposing a "falling water" or other charge for hydroelectric power produced at facilities constructed pursuant to the 1902 Reclamation Act if the licensee is an irrigation district or combination of irrigation districts which have repaid or are obligated by contract to repay all or a portion of the construction, operation and maintenance costs of the facilities on which the hydro power project is located.

2. YAKIMA PROJECT IRRIGATORS HAVE VESTED PROPERTY RIGHTS IN PROJECT FACILITIES:

The cost of constructing, maintaining and operating the existing six (6) dams, storage reservoirs and distribution-delivery systems in the Yakima Project ("facilities") has been or is being repaid to the United States by Yakima Project landowners for whose benefit the facilities were constructed. [See, Ickes vs. Fox, 300 U.S. 82 (1937)].

Approximately 50% of the total cost of $10,882,623.00 to construct the six (6) major storage reservoirs had been repaid by irrigators to the U.S. as of 9/30/80. SVID and other districts have paid and fully satisfied their entire storage construction obligation.

The Federal Power Act (16 USC 792, et seq.) and related administrative regulations ignore and irreparably damage the vested, beneficial ownership and interest of project landowners in existing facilities. FERC's present licensing procedure permits individuals and entities who have no legal or beneficial interest in the facilities or the project's primary purpose of supplying irrigation water, to obtain hydro development license priority on existing project facilities simply by a priority application filing. The filing priority is, under current FERC regulations, difficult if not impossible to overcome. The present FERC licensing practice results in an absolute denial to project landowners of substantial revenue potentially available from project facilities constructed, maintained and operated at their cost and for their sole benefit.

It is my understanding FERC has to date excluded project irrigation districts and granted a preliminary permit on five existing project facilities (Cle Elum Dam and storage, Kachees Dam and storage, Keechelus Dam and storage, Easton Diversion Dam and Roza Diversion Dam) to a non-project entity, Kittitas P.U.D. Also, on Rimrock Lake storage to non-project entity, City of Tacoma.

3. HISTORY OF THE YAKIMA PROJECT:

Appropriation of water in the Yakima River watershed for irrigation began in the 1850's and continued until 1909 primarily from the natural flow of the Yakima River and its tributaries.

Due to early over-appropriation of the available water supply, no additional irrigation development for many fertile acres in the Yakima Valley was feasible unless two things were accomplished: First, existing claimants had to agree to restrict their water usage to beneficial use and equitable distribution, particularly in the low late summer period; and, Secondly, water storage was necessary to salvage the early season runoff for supplying irrigation needs for new land development.

With the passage of the 1902 Federal Reclamation Act, the United States Reclamation Service (now "Bureau of Reclamation" - "Bureau") began studies to expand the irrigable area within the Sunnyside Division and the Yakima-Tieton Division by construction of storage and conveyance facilities. Since storage reservoirs would, however, necessarily have to be operated subject to the approximate 120,000 acres irrigated from the natural flow, the Secretary of Interior required as a condition precedent to federal construction that existing irrigators either voluntarily define and limit their natural flow claims or have them quantified by the Secretary.

Thus, as an alternative to a lengthy and costly adjudication, the existing water rights on the river, approximately 50 irrigators in 1905, executed limiting agreements on the form prescribed by the United States. Approximately 5% of the existing diverters including SVID did not sign limiting agreements.

In addition, although no specific limiting agreement was executed by the United States as operator of the Wapato Irrigation District or trustee for the Yakima Indian Nation, Secretary of Interior Hitchcock, in an attempt to compromise the disputed Yakima River water right claims, agreed as trustee for the Yakima Indian Nation to limit the Tribe's water right to 147 cfs. ("cfs" - cubic feet per second) A joint commission of Congress after extensive investigation including field hearings in 1913 recommended the 147 cfs. be increased to 720 cfs. (63rd Congress, Second Session, House of Representatives Document No. 505). The Congressional commission's finding of fact number 2 acknowledged the priority and validity of the non-Indian irrigators existing vested rights to divert, appropriate and beneficially use water from the Yakima River and its tributaries.

In 1914, the United States Congress acknowledged: (a) the water rights of non-Indian water users in the Yakima River were vested, and (b) the United States and the Yakima Indian Nation were bound by Secretary Hitchcock's 1905 agreement in behalf of the Yakima Tribe settling and limiting its total water right claim to 147 cfs., included in the Indian Appropriation Act of August 1, 1914 (38 Stat. 582, 604), the following:

> "It appearing . . . that the Indians of the Yakima Reservation in the State of Washington, have been unjustly deprived of the portion of the natural flow of the Yakima River to which they are equitably entitled for the purpose of irrigation, having only been allowed 147 cubic feet per second, the Secretary of the Interior is hereby authorized and directed to furnish at the northern boundary of said Yakima Indian Reservation, in perpetuity, enough water, in addition to the 147 cubic feet per second heretofore allotted to said Indians, so that there shall be during the low water irrigation season, at least 720 cubic feet per second of water available when needed for irrigation, this quantity being considered as equivalent to and in satisfaction of the rights of the Indians in the low water flow of the Yakima River and adequate for the irrigation of 40 acres of each Indian allotment; . . . "
> (Emphasis added)

4. WATER SHORTAGES, LITIGATION, ENHANCEMENT STUDY:

The six (6) storage reservoirs constructed by the United States have an active storage capacity of 1,070,700 acre feet. The United States has contracted with irrigators to annually deliver 1,742,400 acre feet. Project irrigators annually require on the average approximately 2.25 million acre feet.

Providing adequate water to meet all demands and operate the project is substantially affected by weather, which we cannot control, as well as the location and capacity of our storage reservoirs.

Sufficient water for all users during the peak irrigation season (July, August, September) depends on: (a) the amount, date and location of rain and snowfall; and, (b) the date and intensity of "runoff" or snow melt; and, (c) the volume of water remaining in Project storage reservoirs after the irrigating season ("carry over").

There have periodically since pioneer days been severe water shortages because of adverse weather conditions and insufficient storage capacity permitting unregulated (natural flow) water to be lost. The frequent shortages have likewise produced expensive, time-consuming litigation between junior and senior appropriators.

A 1945 Federal District Court "Consent Judgment" in KRD, U.S., et al. vs. SVID, et al., Civil No. 21, Eastern District of Washington ("Civil 21") quantified the claims of and established delivery priorities for all major diverters representing approximately 90% of total Yakima River water usage including the U.S. for itself and in behalf of the Yakima Indian Nation.

1977 was, however, another projected drought year and resulted in efforts by several major districts to materially alter the allocations and priorities provided by the 1/31/45 Consent "Judgment".

There has since 1977 been frequent activity in Civil No. 21 including a Federal Court requirement to maintain minimum flow for Indian treaty fish as well as a separate suit in the same Federal District Court by the Yakima Indians (Confederated Tribes & Bands of the Yakima Indian Nation vs. U.S., et al., C-77-129) to substantially increase for Indian irrigation and fish the non-proratable 720 cfs. allocated to them in Civil No. 21. A general adjudication of the entire Yakima River Basin including the U.S. and Indian claims was also started in 1977 by Washington State in a state court of general jurisdiction. (State vs. Acquavella, et al., Yakima County Superior Court No. 77-2-01484-5.)

Congress recognized the critical necessity of developing additional storage capacity in the Yakima River Basin to satisfy existing irrigation and fish demands by authorizing the feasibility study described in PL 96-162. (Yakima River Basin Enhancement Project, Feasibility Study)

It has been estimated more than 1,000,000 additional acre feet of live storage must be developed as quickly as possible to provide enough water in a shortage year for presently irrigated land in the Yakima Project and the Yakima Indian Treaty irrigation and fishery claims.

CONCLUSION

Construction of the needed additional storage facilities and modernization of existing distribution-delivery systems will probably cost between one and two billion dollars. All the money for these projects will not be available from the federal government but will be varying combinations of money acquired from federal and state government, private investors and revenue generated by the affected irrigation districts.

The construction and operation of hydroelectric projects incorporated on presently existing and future Yakima Project storage and diversion facilities beneficially owned by

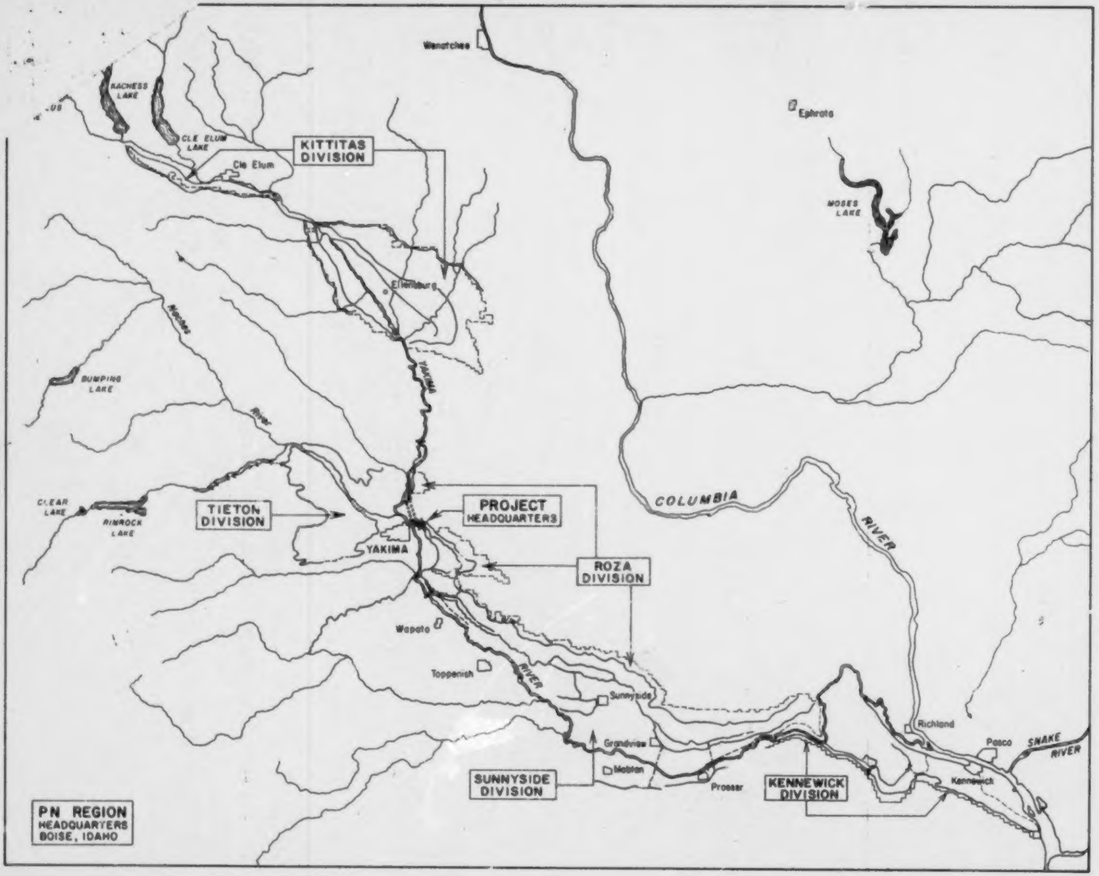
Project landowners would provide revenue which would permit Yakima River Basin landowner-irrigators to begin the expansion of storage facilities and the modernization of their distribution-delivery systems without total reliance on federal funds.

By permitting and even encouraging exclusion of Project landowners from developing hydropower capacity on existing irrigation facilities, FERC implementing the Federal Power Act is depriving Project irrigation districts of essential power revenues and has rendered landowner expansion of the Project virtually impossible.

Respectfully submitted,

Joyce Gould

JOYCE GOULD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BUMPING LAKE
CLEAR LAKE
RIMROCK LAKE
TIETON DIVISION
PROJECT HEADQUARTERS
YAKIMA
ROZA DIVISION
COLUMBIA
RIVER
Wapato
Toppenish
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Sunnyside
Grandview
Mabton
Prosser
SUNNYSIDE DIVISION
KENNEWICK DIVISION
Richland
Pasco
Kennewick
SNAKE RIVER
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HEADQUARTERS
BOISE, IDAHO

FACTUAL DATA ON THE YAKIMA PROJECT

LOCATION

The Yakima Project is situated on the eastern slope of the Cascade Mountains in south-central Washington. The irrigated area of the Yakima Valley extends from the towns of Easton on the northwest to Kennewick on the southeast—a distance of 175 miles.

CLIMATIC CONDITIONS

The climate is mild and free from extreme weather conditions. At Yakima, centrally located on the project, the average rainfall is 7.86 inches and the average length of growing season is 195 days.

WATER SUPPLY

Water is obtained from natural flow of the Yakima River and its tributaries, supplemented by six reservoirs having a combined capacity of 1,070,700 acre-feet. The area of the drainage basin is 6,062 square miles, and the mean annual runoff is 3,040,000 acre-feet. The reservoirs and their storage capacities in acre-feet are as follows:

Bumping	33,700
Kachess	239,000
Keechelus	157,800
Clear Creek	5,300
Rimrock	198,000
Cle Elum	436,900

Water is distributed through the river channels to the headworks of 16 irrigation districts and 15 individual water users. The topography is generally sloping or rolling, affording good natural drainage except in a few spots along the valley bottoms. Project lands range in elevation from a low of 400 feet on the Kennewick Division to a high of 2,300 feet on the Kittitas Division.

CROPS AND LIVESTOCK

There are approximately 60 kinds of fruit, vegetable, seed, grain, forage, and specialty crops grown in the Yakima Valley. Yakima County, of the 3,072 counties in the United States, ranks first in the production of apples, mint, and hops, and fifth in total agricultural production.

The mild winters are favorable for the breeding and production of beef cattle, dairy cattle, and sheep.

PRINCIPAL MARKETS

Agricultural products are processed in the valley and distributed throughout the Nation. Many industries, such as canneries, fruit-packing plants, quick-freeze plants, meat-packing plants, creameries, a winery, grape juice and cheese factories, and a sugar factory provide local markets and distribution of the many crops grown.

PROJECT FEATURES

The project features constructed by the Bureau of Reclamation include 1,946 miles of canals and laterals, 6 storage dams, 5 diversion dams, 2 hydroelectric powerplants (Chandler, 12,000 kilowatts and Roza 11,250 kilowatts), transmission lines (Roza, 13.2 kilovolts, 7.2 miles, and 34.5 kilovolts, 63 miles), and 30 pumping plants. The features of the Wapato Indian Project, which is operated by the Bureau of Indian Affairs, are in addition to the above-mentioned ones.

IRRIGABLE LANDS

Upon completion of the project, the total area under irrigation in the valley will approximate 500,000 acres, of which about 475,000 acres are now irrigated. The irrigation divisions and their irrigable acreages served by government financed facilities are as follows:

Division	Acreage
Sunnyside	103,570
Tieton	27,271
Kittitas	57,399
Roza	72,511
Kennewick	19,171
Wapato	136,000

Water for the remaining irrigable land is supplied through Warren Act contracts and by individuals diverting from small streams.

SOILS AND TOPOGRAPHY

The predominant soil is volcanic ash of fine, silty texture of considerable depth, usually underlaid with gravel or decomposed basalt.

GPO 994-681

Senator HUMPHREY. Mr. Campbell.

STATEMENT OF ROBERT H. CAMPBELL, ROBERTS & SHEFELMAN

Mr. CAMPBELL. Let me say that I, with Dr. Marker, Mr. Baird and Russ Smith, are some of the few people who testified before you who have been through the entire process of developing small hydro sites from conception to actual licensing and operation, and I concur with Dr. Marker. I think that the Federal Energy Regulatory Commission has done a marvelous job under extraordinary circumstances, and I will simply give our concurrence with the statements made earlier for the reasons stated earlier, with the proposition that the Federal Energy Regulatory Commission remain the centralized agency with basically exclusive jurisdiction to decide the licensing issues.

It is a little chaotic in Washington. A centralized agency is needed to resolve the issues among competitive developers, among municipal versus private interests, and among prodevelopment and antidevelopment issues. I speak also in favor of the municipal preference for all of the reasons that the municipal preference was included in the Federal Power Act originally. It should be continued.

In terms of streamlining the process at FERC, I think that a strict adherence to the time limitations imposed by FERC and imposition of additional time limitations, coupled with fair and adequate notice to all applicants and limitation of interventions would solve the backlog problem that FERC is currently experiencing.

I would like to focus, though, on two issues that have not been discussed in very much detail today, and those are the annual charge problem, and the preference problem which Mr. Baird has alluded to relating to the development of Federal projects by the irrigation district municipalities which have paid the capital cost of those facilities.

The annual charge imposed by FERC for dam use is based upon what they call sharing the net benefits, and the theory behind it is that the Federal Government should be recompensed for the benefit that it provided by making the hydroelectric available that is being utilized by the private developer. In the case of an irrigation district on reclamation projects, under repayment contracts, this irrigation district will repay the capital cost of the facility. Therefore, it is, the benefit is provided by the irrigation district and not the Federal Government in those instances, and those irrigation districts which do develop the Federal property that they are paying for, have paid for, should be exempt from the Federal damsite charge, all damsite charges, and that should be provided by amendment to the Federal Power Act.

As well, if a non-Federal developer develops a Federal project which is paid for by a municipality, particularly a reclamation district, irrigation district, the annual charge should not be paid to the U.S. Treasury but rather should be paid to the irrigation district municipality which in fact paid the construction costs of the facility.

With regard to the development rights of those facilities, Mrs. Gould directly alluded to the problems faced by these irrigation districts. *For example, in the* Sunnyside Valley, the Federal Government itself has oversubscribed to the water that is available. There is litigation, and it will go on forever, and even if it does terminate, it will not solve the problem.

The problem is that there are more demands for the water than there is water available to satisfy those demands. The answer is to increase storage. The answer is to increase irrigation facilities. The irrigation districts don't want the Federal Government to pay for that. They want to have the opportunity to pay for that development themselves. The only way that they can pay for that development in light of increased costs that they are experiencing on the farming level, given the fact that their crops are subject to open market prices, is to have income from the resources that they have paid for. That is hydroelectric revenue. Therefore, it is their position that they should have a statutory preference for developing the sites that they paid for.

Thank you.

Senator HUMPHREY. Thank you, Mr. Campbell.

[The prepared statement of Mr. Campbell follows:]

TESTIMONY OF

Robert H. Campbell

before

The United States Senate Committee on
Energy and Natural Resources Subcommittee on
Water and Power and Subcommittee on Energy Regulation
Joint October 19, 1981 Hearing

Mr. Chairman and Subcommittee Members:

Introduction

My name is Robert H. Campbell. I am a member of the law firm of Roberts & Shefelman in Seattle, Washington. Our firm is and has been for in excess of 50 years municipal bond counsel for various states, counties, cities, towns, special purpose districts, authorities and other entities capable of issuing tax-exempt obligations. As well, we have been deeply involved in the licensing, financing and development of small hydroelectric generating facilities throughout the Pacific Northwest and other parts of the country, representing both municipal and private developers.

I have been the principal partner of our firm involved in working on small hydro and am thoroughly familiar with all of the problems of licensing, structuring and financing these projects and with dealing with state and federal agencies and special interest groups concerned with small hydro development. Currently, I am involved with in excess of 30 small hydro projects at various stages of development and am one of the few people to testify before you today who has worked on a small hydroelectric project from its beginning conceptual stages through state statutory amendments, power purchase and sale contract negotiations, joint operating agreements, federal and state agency negotiations, financing, licensing and finally to operation.

Although my testimony today will be confined to a general discussion of the Federal Energy Regulatory Commission licensing process and specific comments on the Federal Power Act Section 10(e) "annual charges" and the so-called "falling water charge" sought to be imposed by the Department of Interior under Section 9(c) of the Reclamation Laws, I would like to say that my general experience in dealing with elected and appointed representatives and members of agencies and administrative staffs has been favorable. The people whom I have dealt with on both the state and federal levels have recognized the importance of developing our nation's environmentally sound, technically safe and renewable hydroelectric resources and generally have worked hard within the confines of the laws and regulations they administer to facilitate that development.

Federal Energy Regulatory Commission Licensing

The Federal Energy Regulatory Commission (the "Commission") has done an extraordinarily good job processing applications for preliminary permits, exemptions and licenses for small hydro developments. It has, in recent years, been inundated with applications relating to small hydro development; yet, without significant increases in its staff, has managed to process those applications in a fair and orderly manner.

I, and certainly others, at times have been frustrated with what is perceived to be Commission bureaucratic delay. However, it has been my experience that the principal cause of any permit, exemption or license processing delay is the highly competitive nature of small hydro development and the Commission's attempt to treat all applicants fairly. I found the members of the Commission's administrative staff and lawyers whom I have dealt with to be, to the person, extremely open, cordial, helpful, responsive to new theories and flexible and innovative in their thinking. These individuals, including Ron Corso, Director of the Division of Hydropower Licensing, Bill Wakefield, Chief of the San Francisco Section of the Applications Branch, Ray Hagenloch, Hydroelectric Licensing, Office of General Counsel, Quentin Lawson, Hydroelectric Licensing, Office General Counsel, and Paul Carrier, Project Manager, Civil Engineer, San Francisco Section of the Applications Branch, to name a few, but without intending to exclude the many others who work diligently towards the development of small hydro, are the antithesis of the commonly characterized lazy and indifferent federal bureaucrat. They are hard working, dedicated and, I would say, underpaid professionals for whose services we all should be grateful.

The Federal Energy Regulatory Commission plays an extremely important role in the development of small hydroelectric generating facilities. It is the single centralized agency which serves as the final arbiter of all disputes relating to small hydro development and, for that function alone, is invaluable. Without such an agency with ultimate jurisdiction, the development of small hydro would be thrown into chaos. Federal, state and local agencies and entities as well as special interest groups, each with its own interest to protect, could cause terminal delays at every level of permitting and approval and thereby either defeat the development of small hydro or drive its already extensive cost to levels which would make it economically infeasible. The Commission has demonstrated historically that it is eminently capable of balancing hydropower development with concerns relating to the protection of the environment, fish, wildlife, land reservations, existing facilities and their primary purposes and other competing interests. The Commission should retain its position as the agency with final jurisdiction over all disputes relating to hydropower development to assure the prompt, efficient and economical development of our nation's small hydro resources.

I would like to comment briefly in opposition to two legislative changes in the Federal Power Act which have been suggested, the elimination of the municipal preference and the expansion of exemptions from licensing.

Municipal Preference

The municipal preference for the development of hydroelectric power projects by municipalities contained in Section 7(a) of the Federal Power Act is essential to the development of our nation's hydroelectric resources at the lowest possible cost and for the highest possible public benefit.

The ability of municipalities to finance highly capital intensive hydro projects at relatively low tax-exempt interest rates dramatically reduces the cost of energy from those projects. For example, the difference between financing a $20 million power plant with a 10 megawatt installed capacity at an average annual output of 43 million kwh of electricity with tax-exempt bonds bearing 15% interest and having 20 year level debt service and financing the same project with taxable borrowing bearing 20% interest with the same term and level debt service is $18,145,000 over the term of the loan, or an average of 23 mills per kwh of energy produced annually. As well, since municipalities may produce electricity at cost and do not have to factor into their rates income and other taxes and a return or profit for their investors, the cost of energy produced by municipalities always will remain low relative to the cost of private development of that same energy notwithstanding the various tax incentives available to the private developer of power.

In addition to the cost savings realized by municipal development of power projects, there are public policy reasons to support the municipal preference. The development of a regional resource by a municipality provides a direct benefit to the citizens of that region rather than to the investors of an in-state or out-of-state private developer. If the municipality sells the power from its project at cost, the benefit of the lower cost power is retained by the consumers of the region. If the municipality sells power at a price in excess of cost, the profit realized by the municipality is used to defray the costs of other governmental services, thereby reducing the tax burdens of the region's taxpayers.

Since the Commission is required by Section 7(a) of the Federal Power Act to determine that a municipality's plans for the development of a hydro project are "equally well adapted to conserve and utilize in the public interest the water resources of the region" as are the plans of a private applicant before the Commission may prefer the municipality in the development of the project, and since the municipality must give notice of its intention to compete with the private applicant for the development of a project and actually engage in competition within short time periods following the private applicant's initial filing, neither the quality of the project nor the time when it will be developed is impaired significantly as a result of the municipal preference.

Therefore, for the public policy and cost reasons I have mentioned, the municipal preference should be preserved.

Exemptions from Licensing

Currently there are two exemptions from licensing under the Federal Power Act, that contained in Section 30 of the Act for projects having an installed capacity of 15 megawatts or less utilizing certain previously constructed water conduits, and that contained in Sections 4.101 through 4.108 of the Commission's regulations for projects not involving new dam construction having an installed capacity of 5 megawatts or less and located either entirely on federal lands or entirely on lands of the applicant. The chief advantages of utilizing these exemptions are a potentially speedier review process, the ability to transfer the project without Commission approval and the perpetual duration of the exemption. The principal disadvantage of exemptions is the removal of the Commission as the final arbiter of all disputes relating to the development of the exempt project.

As discussed earlier, it is critical to the expeditious and fair development of our nation's hydro resource to have a single referee of all disputes. Otherwise, in the currently highly competitive climate of small hydro development, competitors and special interest groups could exercise power disproportionate to the importance of their cause or position and through the cost and delay of administrative and judicial proceedings virtually halt the development of small hydro at a time when it is most needed. To encourage such an atmosphere by expanding exemptions from licensing would be, despite their superficial attractiveness, counter productive in the end.

Rather than provide an opportunity for uncontrolled chaos in the small hydro development field by expanding exemptions from licensing, Congress and these Subcommittees should encourage the Commission to expedite its permit, licensing and exemption process even further by requiring all persons to adhere strictly to all filing deadlines and by denying unnecessary interventions.

Federal Power Act Annual Charges

The Commission is required by Section 10(e) of the Federal Power Act to impose reasonable annual charges on licensees of waterpower projects to reimburse the Commission for its costs of administering Part I of the Act (the "administrative" charge), to recompense the United States for the use, occupancy and enjoyment of federal land and property (other than federal dams and structures) (the "rental" charge) and to recompense the United States for the benefit of utilizing previously constructed federal dams and other structures (the "dam use" charge).

The administrative and rental charges generally are insignificant and non-controversial. The administrative charge allows the Commission to be somewhat self-supporting by authorizing it to recover its administrative costs allocable to hydroelectric development from the parties specially benefited by the licenses issued by the Commission. The rental charge simply imposes normal rent for the use of federal land. The dam use charge, which is a fee based on benefit, is somewhat more complex and controversial.

The theory behind the dam use charge is that by issuing a license to use a federal dam or other structure for the generation of electricity, the Commission confers a benefit on the licensee for which the federal government should be compensated. The charge is not a tax but rather a fee for the benefit conferred and must be at least proportionate to the value of that benefit. City of Vanceburg, Kentucky v. FERC, 571 F.2d 630 (D.C. Cir. 1977). Since the dam use charge is not imposed if the licensee uses non-federal dams or other structures to generate hydroelectric power, the charge is not for the benefit of receiving a license but rather for the benefit of using facilities paid for by the federal government.

The methodology most commonly utilized by the Commission to determine the dam use charge is called the "sharing-of-net-benefits" method. Under this method, the Commission determines the annual cost of operating the power project, determines the annual cost of operating the least expensive alternative for producing equivalent energy, determines the benefit by subtracting the annual cost of operating the project from the annual cost of operating the least expensive alternative and assesses one-half of that benefit as the dam use charge. Alternatively, when power purchase contracts are used, the Commission determines the profit to be paid to the power producing licensee and assesses a dam use charge in the amount of one-half of that profit.

The proceeds of the dam use charge are paid into the Treasury of the United States and allocated among federal accounts in the manner prescribed by Section 17(a) of the Federal Power Act. There is no authority for the payment of all or any part of the dam use charge to a municipality which ultimately pays all or part of the construction cost of the federal dam or other structure being used.[1]

The rationale of the dam use charge is supportable when applied to a private or municipal licensee which did not pay or repay the federal government for any of the cost of the federal facility being used. These persons and entities should not be able to take advantage of the hydroelectric generating potential created by a federal facility that they did not pay for. Clearly they should be required to compensate the federal government and the entity which paid or repaid the federal government for the construction cost of the facility being used for the benefit of utilizing that facility for the production of power.

On the other hand, the rationale for the dam use charge is wholly unsupportable when applied to municipal licensees which have paid, repaid or are obligated to repay the federal government the entire construction cost of the federal facility being used and is only partially supportable when applied to municipal licensees which have paid, repaid or are obligated to repay the federal government only part of the construction cost of the federal facility being used.[2] If a municipality is obligated to repay the federal government the entire construction cost of a federal dam, it is difficult to understand how the federal government can rationalize that it provided the benefit of the existence of that dam and the hydroelectric generating potential it creates.

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1. Thirty-Seven and one-half percent of the charges arising from licenses for the occupancy and use of national forests and public lands are paid from the United States Treasury to the State where the project is located. The recipient state is under no obligation to pass that payment on to the municipality which ultimately paid the construction cost of the facility.

2. There is only one exception to this statement I am aware of. In the case of the Columbia Basin Project, the federal government and the three Columbia Basin Irrigation Districts negotiated elaborate repayment contracts whereunder the irrigation districts are required to repay all of the irrigation component of the capital cost of the multi-purpose Columbia Basin Project, required to maintain and operate the entire irrigation transmission and delivery system of that project and are required to pay all the costs of operating and maintaining the entire Columbia Basin Project irrigation facility. In exchange for these extraordinary responsibilities, the irrigation districts negotiated for and obtained the right to develop, own and operate all of the hydroelectric generating potential of the Columbia Basin Project irrigation transmission and delivery system and to keep the revenues from the sale of electricity from those developments. This, to my knowledge, is a unique right.

The dam is paid for by the municipality, and therefore the municipality, not the federal government, is responsible for the benefit provided by the dam. To require the Commission to impose a dam use charge on the very municipality which created the benefit is anomolous to the purpose and rationale of the dam use charge. No municipal licensee which has paid, repaid or is obligated to repay the federal government the entire construction cost of the federal facility it seeks to use for the development of waterpower should be required to pay a dam use charge. Those municipalities which have paid, repaid or are obligated to repay only a portion of the construction cost of the federal facility they seek to use for the development of waterpower[3] should pay a dam use charge which bears the same relationship to the dam use charge they would pay if they had no payment or repayment obligation as the portion of the construction cost of the federal facility they are not repaying bears to the entire construction cost of that facility. This allocation would result in a dam use charge which compensates the federal government for that portion of the benefit it provides.

The standard argument made in favor of imposing a dam use charge even on those municipal licensees which have paid, repaid or are obligated to repay the construction cost of the federal facility being used is that the federal government in fact made the benefit of the facility available by paying the construction cost of that facility as it was built and requiring less than a market rate of interest or no interest payment at all on the municipal repayment obligation.

The answer to this argument is that each federal facility has a purpose or several purposes which in almost all cases exceed the local benefit. For example, reclamation projects provide our country with a stable and assured food supply. This benefit is broader and more universally shared than the special benefit to the farmers who use the reclamation facilities to irrigate their crops. When federal reclamation project irrigation districts, such as the Sunnyside Valley Irrigation District in the Yakima Project in Washington State, repay the entire construction cost of the federal reclamation facilities, the United States is able to provide the broad and universal public benefit which initially supported the appropriation of money for the project at a price equal to the federal cost of money. Even this cost is reduced, if not eliminated entirely, by the offset in income tax revenue received from the farmers of the irrigated land.

Thus, under the rationale for the dam use charge, the federal government is entitled to no fee from municipal licensees using federal facilities for which they have paid, repaid or are obligated to repay the federal government the entire construction cost and is entitled only to a partial fee when the municipal licensee has paid, repaid or is obligated to repay part of the construction cost of such federal facilities.[4]

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[3] With the exception of the Columbia Basin Irrigation Districts. See footnote 2, supra.

As well, when the Commission collects the dam use charge from a private or municipal licensee which did not pay, repay or obligate itself to repay any of the construction costs of the federal facility being used, that dam use charge should be paid to or be used to reduce the obligation of the municipality which paid, repaid or is obligated to repay the construction costs of the federal facility being used. The entire dam use charge should be paid to municipalities which paid, repaid or are obligated to pay the entire construction cost of the federal facility being used and the portion of the dam use charge which bears the same relationship to the entire dam use charge as the portion of the construction cost the municipality paid, repaid or is obligated to repay bears to the total construction cost of the facility being used should be paid to municipalities which paid, repaid or are obligated to repay only part of the construction cost. Any other result would create a windfall for the federal government at the expense of the local municipalities and their citizens who are specially burdened with the responsibility of paying for the facility providing the opportunity for hydroelectric generation.

Interior Falling Water Charge

The Department of Interior, through its Bureau of Reclamation, has indicated that it is considering the imposition of an annual "falling water" charge upon developers of hydropower projects on facilities under the jurisdiction of Interior. Although not clearly defined, this charge apparently would be roughly equivalent in amount to the dam use charge imposed by the Commission.

The issue of whether the Commission has exclusive jurisdiction to impose all charges on its licensee or whether Interior has concurrent jurisdiction to impose charges upon developers of licensed projects on Interior-managed facilities has not been resolved by agreement between the Commission and Interior. The question of the relative jurisdictions of these agencies to impose dam use or falling water charges was expressly excluded from the Memorandum of Understanding Between the Federal Energy Regulatory Commission of the Department of Energy and the Water and Power Resources Service of the Department of the Interior For Joint Participation in Non-Federal Hydropower Development in the Approval of Plans and Drawings, Project Access, Power Lease Charge and Use of Lands

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[4] With the exception of the Columbia Basin Irrigation Districts. See footnote 2, *supra*.

Administered by the Water and Power Resources Service dated June 22, 1981. It is submitted that the Commission is the appropriate agency to impose any and all fees related to the use of federal facilities for hydropower development and that once the Commission has determined whether a charge is appropriate and the amount of that charge, Interior has no jurisdiction to impose an additional or contrary charge for the use of federal facilities.

The legislative history and purpose of the Federal Power Act and its predecessor acts, as well as the Federal Power Act itself, clearly support the conclusion that the Commission has exclusive jurisdiction over the development of all hydro projects subject to federal jurisdiction. See Monongahela Power Co. v. Alexander, 507 F. Supp. 385 (D.D.C. 1980); City of Tacoma v. Taxpayers of Tacoma, 357 U.S. 320, 2 L. Ed. 2d 1345, 78 S. Ct. 1209 (1958); and First Iowa Hydro-Electric Cooperative v. FPC, 328 U.S. 152, 90 L. Ed. 1143, 66 S. Ct. 906 (1946).

Although Sections 4(3) and 10(e) of the Federal Power Act require the Commission to give serious consideration to Interior's comments relating to the use and fees charged for the use of federal facilities, the Commission has ultimate jurisdiction under Section 10(a) of the Act to decide all terms and conditions of licenses, including the amount of all charges it statutorily is required to impose for the use of federal dams and structures. Any claim by Interior to impose charges in addition to or in lieu of charges imposed by the Commission is unsupportable.

To allow the Bureau, Army Corps of Engineers or any other federal agency statutorily charged with the stewardship of federal facilities capable of being used to generate hydroelectricity to impose charges upon licensees of projects on those facilities would amount to decentralized regulation of waterpower development, the result the Federal Power Act was passed to prevent.

Interior's only statutory justification for imposing its falling water charge is contained in Section 9(c) of the Reclamation Laws. That section authorizes the Secretary of Interior to impose rates which "in his judgment will produce power revenues at least sufficient to cover an appropriate share of the annual operation and maintenance cost, interest on an appropriate share of the construction investment at not less than 3 percentum per annum, and such other fixed charges as the Secretary deems proper" for "[a]ny sale of electric power or lease of power privileges made by the Secretary in connection with the operation of any project or division of a project".

Since the Secretary of Interior does not sell power from projects developed by Commission licensees nor does he lease any power privileges, and since the privilege of developing the project is provided by the Commission license, the Secretary of Interior has no statutory authority to impose a falling water charge or any other charge for the privilege of developing hydroelectric energy on a reclamation project facility.

Finally, even if Interior is found to have an independent grant of authority to impose a falling water charge upon a licensee of a hydroelectric power development on a Bureau facility, that charge should be treated in exactly the same manner as recommended for treatment of the dam use charge. For all of the reasons set forth above in opposition to the imposition of a dam use charge upon municipal licensees which are developing the hydroelectric generating potential of federal facilities they paid, repaid or are obligated to repay all or part of the construction cost of, no falling water charges, or in cases of partial payments or repayments, only partial falling water charges, should be imposed on such municipalities.[5]

Impact of Charges

At a time when the development of our nation's energy resources is critically important, it is appropriate to examine the question of whether dam use, falling water or other charges for the use of federal facilities should be imposed upon the developers of hydroelectricity.

A number of recently enacted federal laws have provided incentives for the development of small hydroelectric generating facilities. The Public Utility Regulatory Policies Act of 1978, as amended by the Renewable Energy Resources Act of 1980, encourages small hydro development by requiring utilities to purchase the output from small hydro projects at the utilities' avoided cost, prohibits price discrimintation by utilities in their sales of electricity to the developers of small hydro, exempts small hydro projects from the Public Utility Holding Company Act and provides the 15 megawatt small conduit hydroelectric facility exemption. The Renewable Energy Resources Act of 1980 also authorizes exemptions from licensing for small hydro projects with an installed capacity of five megawatts or less. The Crude Oil Windfall Profit Tax Act of 1980 added qualified hydroelectric generating facilities as facilities eligible for tax-exempt industrial development bond financing or alternatively an 11% energy tax credit. The Pacific Northwest Planning and Conservation Act promotes the development of renewable resources generally.

With the federal government encouraging the development of small hydro, it seems inconsistent with current federal policy and contrary to the energy needs of our nation to discourage power development by allowing the imposition of charges which make already marginally expensive projects more costly and drive up the cost of electricity.

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[5] With the exception of the Columbia Basin Irrigation Districts. See footnote 2, supra.

It therefore is submitted that the elimination of the dam use charge and any other charges for the use of federal facilities for the generation of electricity would be consistent with the policy to develop the hydroelectric generating potential of our nation's resources.

Conclusion

The cost of energy and federal incentives have resulted in a dramatic increase in the activity of developing the small hydro resources of our nation. The competition for development of this resource among developers, both municipal and private, and among proponents and opponents of hydroelectric development generally is fierce. It is extremely critical that a single, centralized agency exist with the power to make final decisions with regard to hydroelectric development.

The Federal Energy Regulatory Commission historically has fulfilled this function admirably. It should continue to do so. Rather than add to the confusion in developing hydroelectric resources by either increasing the size of projects exempt from licensing or increasing the number of exemptions, the Commission should be encouraged to streamline its permit and licensing process to the extent possible consistent with fairness to all applicants.

The historical reasons which supported the enactment of the municipal preference are still applicable to the public development of power. This preference should not be eliminated or reduced.

The imposition of charges for the use of federal facilities increases the cost of generating electricity and provides a disincentive to locating projects on those facilities. Serious consideration should be given to the elimination of these charges. If the charges are allowed to remain, they should be modified to exempt municipal licensees which paid, repaid, or are obligated to repay all or a portion of the construction cost of the federal facilities being used from all or a ratable portion, whichever is applicable, of the charges. As well, if charges for the use of federal facilities paid for in whole or part by municipalities are to be imposed upon licensees who did not pay any part of the construction costs of those facilities, the charge should be paid to the entity which paid, repaid or is obligated to repay the capital cost of the facility in proportion to its payment or repayment obligation.

Senator Humphrey. I want to acknowledge the presence of Senator Jackson who is the ranking member of the full committee. Senator Jackson?

Senator Jackson. Thank you, Mr. Chairman. I wanted to say to the witnesses that we have been in a meeting, a press conference, on the huge Alaska gas pipeline with Senator Murkowski who is chairman of the subcommittee and Senator Stevens and Senator McClure. That is the reason for the delay. We have got two things going on at once, and of course, the pipeline is a vital matter, as are the concerns that you are expressing here this morning.

I am very familiar with these problems, Mr. Chairman, and I appreciate having the statements, and I will go over them very carefully inasmuch as I couldn't be here for the earlier testimony.

Senator Humphrey. We will continue with the opening statements of the witnesses.

Mr. Boronkay?

Mr. Boronkay. Thank you, Mr. Chairman. I would like to commence by making the written statement part of the record if I may, and I will just have some brief comments.

Senator Humphrey. Certainly.

STATEMENT OF CARL BORONKAY, GENERAL COUNSEL, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Mr. Boronkay. I am here to address something that has been mentioned but a little differently, and that is the question of whether modification of the present exemption provisions of the Federal Power Act would not encourage water districts, water distribution agencies, from taking advantage of the hydropower potential on their own systems.

I represent the metropolitan water district of southern California, the largest wholesale water-delivery public agency of the United States, and probably in the world. We cover six counties in southern California. We have a service area of 5,200 square miles and a population of over 12 million people. We sell our water only to our member agencies which are also public agencies. They include cities, municipal water districts, and those districts include many, many more cities.

We have had this experience—we saw the potential early of producing power in our own system, in our conduits, due to the heavy pressure of water. We get our water from two sources, the Sacramento Delta and the Colorado River through aqueducts. We have in addition some 500 miles of large-diameter pipelines. With the tremendous increase in the cost of oil, it became economically feasible for us to utilize the pressure in those pipelines. Until that time, we would use huge throttling valves to dissipate that energy, totally wasted, but economically the only sound thing to do.

We saw the possibility of putting turbines on our own pipelines at several locations. We were immediately confronted with the question of whether we were required to have licenses under the Federal Power Act, and the licensing provisions caused the water district to hesitate. The jurisdiction of the new FERC is a real question to our district. In fact, we challenged whether there was jurisdiction and whether we needed licenses at all, and that dragged on for some years, and because we wanted to go ahead with our project, we availed ourselves of the newly passed exemption procedures, and in doing so, we have sited 15 plants. They will have a total of 78 megawatts. They will save annually 743,000 barrels of oil, enough to generate the electricity needs of over 85,000 homes.

We have gone ahead. Phase 1 has four plants in production, and a fifth that will come on shortly. Phase 2, under construction are five additional plants. They will have some 32 megawatts. We have sited five others, completing our 15-unit project, and are still looking, but we have this experience with regard to the exemption procedure.

The exemption procedure, though it sounds good as an exemption, is in fact a minilicense. It is a simplified but still a license procedure. It is optional or discretionary with FERC. It is not a mandatory process, or their issuing of the exemption is not mandatory. It has cost us about $5,000 for each application. We have had seven submitted. Our first one was about $10,000, and as we gained experience we were able to cut the cost. Now we are a large agency. We have a substantial engineering staff, but we talk to the many smaller water-distribution agencies, and $5,000 per application is not as insignificant to them, but perhaps of even greater concern is the reservation by FERC in its regulations to impose terms and conditions on the exemptions. Those terms and conditions include such terms that are required for the public to protect life, health, and property, a rather large concept which makes water districts question whether they want to go forward.

The regulations also provide for the protection of the water supply itself, and finally, a category that is very broad, the concern is the preservation or development of the water resources in the area where the plant will be built.

Now local water agencies have a great concern in submitting their water rights, their distribution system, to an agency in Washington, so these factors—the cost, the optional nature of the exemption, and the potential imposition of regulations that govern the water supply system of a local area—are inhibiting factors to water agencies. We have gone ahead, but I am not sure others have.

I wonder—what I have always wondered is what is gained by the Federal Government, by FERC itself, having to pass upon exemptions. We are talking about water in a supply system that has been taken from the source, which incidentally will be used to produce power. There is no imposition. There is no new burden passed upon any Federal reservoirs. The water will be taken for a supply purpose, either municipal, industrial, or agricultural, irrespective of whether there will be any power production. There is no new burden, therefore, on any Federal reservoirs, and therefore no nexus for Federal regulation.

Indeed, an interesting irony is if you look historically at the Federal Power Act, it came into being to facilitiate the utilitization of Federal resources to produce power. Prior to 1920, the power producer had to get the approval of the Secretary of the Interior, of the Secretary of Agriculture or the Secretary of War, and an act of Congress. The Federal Power Commission was to be a one-stop agency to facilitate the use of Federal resources to produce power. Ironically, to subject water distribution agencies that impose no burden on the Federal resource to a regulation has the opposite effect of the very purpose of the Federal Power Act.

For that reason, I close in recommending to this committee H.R. 4485 which would give an outright congressional exemption to power production on man-made conduits of water distribution agencies.

I thank you.

[The prepared statement of Mr. Boronkay follows:]

STATEMENT OF THE
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA*
TO THE
SUBCOMMITTEE ON ENERGY REGULATION
AND THE
SUBCOMMITTEE ON WATER AND POWER

OCTOBER 19, 1981

The Metropolitan Water District of Southern California appreciates this opportunity to address this committee on the important matter of new energy sources. In this regard, the question of whether governmental regulations further the objectives of government and the public interest is one that should be of continuing interest to the regulatory agencies, as it obviously is to those entities subject to regulation. We hope we can contribute to this important undertaking and will be of assistance to this committee to carry out its responsibilities.

There is one area of Federal law and regulation that appears to serve no beneficial purpose, but merely constitutes a burden to both the Federal Energy Regulatory Commission and to local public agencies and private concerns interested in tapping the hydroelectric power potential inherent in water distribution systems. There can be no dispute that the public has a substantial and urgent interest in such power production. Any Federal law and administrative regulation which impedes this interest should be rejected.

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*Presented by Carl Boronkay, General Counsel

Metropolitan is a public agency incorporated under the laws of the State of California. For 35 years it has been wholesaling supplemental water to its member public agencies, now totaling 27 in number, located throughout an area of 5,200 square miles in six counties in Southern California ultimately serving over 12 million people.

Metropolitan presently obtains the water for its distribution system from two sources. For more than 25 years, Metropolitan's only source of supply for its distribution system was its Colorado River Aqueduct. Both the aqueduct and distribution system were built and operated for many years solely for water delivery. The Colorado River Aqueduct is supplied with water withdrawn from the Colorado River at Lake Havasu pursuant to contracts whereby the United States has agreed to deliver water which is in storage at Lake Mead on the Colorado River. This water is transported a distance of 215 miles to distribution pipelines which transport the water south to San Diego County or 240 miles to Lake Mathews which is the terminus of the aqueduct and from which other distribution lines emanate. Because of the terrain along the aqueduct, the water is lifted a total of 1,617 feet at five pumping stations on its way to either point.

In the 1950's, Metropolitan became aware that there would soon be a need for an additional supply of water. As a consequence, on November 4, 1960, Metropolitan executed a contract with the State of California whereby the State was to make available specified quantities of water from its State Water Resources Development System (hereinafter referred to as "State Water Project"). The State Water Project draws its water from the Sacramento-San Joaquin Delta which is a navigable waterway of the United States. Water from the State Water Project can be delivered to Metropolitan at any one of or combination of three points. As a consequence, the State transports the water a distance of between 340 and 445 miles and, because of the terrain along the aqueduct, has to pump the water between 3,432 and 3,779 feet, depending upon point of delivery.

Design and construction of Metropolitan's own water distribution system commenced in the 1930's and now includes over 500 miles of large diameter pipelines. Included as an integral part of the system are many pressure control facilities. These facilities are necessary to control the flow and reduce the pressure caused by the vast difference in elevation between the terminal reservoirs and various points of water delivery. This pressure reduction is normally accomplished by the use of large throttling valves which control the water flow and, in the process, dissipate large amounts of hydraulic energy.

The drastic increases in the costs of energy experienced in the early 1970's and continuing today caused Metropolitan's staff to investigate the feasibility of constructing and operating hydroelectric plants at various pressure control facilities on its water distribution system.

These planned hydroelectric plants will totally or partially assume the function of the existing pressure control facilities and will permit recovery of the energy which is now being wasted. The power production is entirely incidental to Metropolitan's water distribution activities and will in no way affect or modify the withdrawal of water from the Sacramento-San Joaquin Delta or the Colorado River.

The initial investigations identified five sites at which construction and operation of such plants would be feasible. In subsequent investigations, ten additional sites were deemed feasible. The total capacity of these fifteen plants will be 78.4 megawatts. Power plants have been completed at the initial five sites. They have a total capacity of about 30 megawatts. Five additional plants, with a total capacity of 29.4 megawatts, are under construction with completion dates of no later than August 1982.

When completed, this current program of Metropolitan will save 743,800 barrels of oil per year. We are also studying additional sites.

To date, Metropolitan has filed applications with the Federal Energy Regulatory Commission for seven of the fifteen power plants it intends to build. These applications have been filed pursuant to Section 30 of the Federal Power Act (Act of June 10, 1920; Ch. 285; 41 Stat. 1077, as added by Public Law 95-617, Title II, Section 213; 92 Stats. 3148).

Section 30 permits, but does not require, the Federal Energy Regulatory Commission to grant exemptions to conduit hydroelectric plants of fifteen megawatts or less.

As of this date, we have received exemptions for the first six plants. The exemption application for the seventh plant is still pending. In each case, the granting of the exemption has been barely ahead of the plant going on-line.

To comply with the application requirements, we will have to prepare eight more applications for the remaining planned plants. If other sites prove to be feasible, further applications will have to be prepared. We estimate that the application for the first plant took 200 manhours to complete and, including the costs of labor, cost approximately $10,000 to complete. Subsequent applications have taken 100 manhours to complete and have cost $5,000 each. Although we have incurred some savings in applications subsequent to the initial one because we have been able to reuse some data, we still have had to prepare information, much of which we otherwise would not need to prepare and have lost many manhours and money which could be devoted to other uses. As required by Commission regulations contained in 18 Code of Federal Regulations Sections 4.90 through 4.94, each application has had to contain a description of the facility and the proposed mode of operation, including information regarding the type of turbine, its technical characteristics, estimated average amount of flow, maps showing the location of the plant, and an environmental report. In addition, drawings showing structures and equipment must be included.

Also, we have had to obtain letters from the United States Fish and Wildlife Service and the California Department of Fish and Game confirming that these plants will not adversely impact flora and fauna. Here it should be noted that Metropolitan's distribution system is a closed conduit pipeline system and utilizes an extensive fish screening system at all intake points. The proposed hydroelectric plants can have no effect on fish or wildlife.

I would also like to emphasize that projects such as these are not peculiar to Metropolitan, but can be developed in any water supply system where there is sufficient capacity and head to operate a turbine.

We are not aware of any benefit, Federal or otherwise, which results from this exemption procedure. No adverse impact to any resources in which the Federal Government has an interest has ever been identified. We believe that the additional costs we have incurred to date and will incur in the future serve no purpose. It should be pointed out that our costs are, in all probability, less than those which will be incurred by other companies and agencies. Many companies and agencies with a hydroelectric potential do not have the staff necessary to perform the required engineering and legal work and have to use consultants whose fees may well be considerably in excess of our costs.

In addition, the regulations issued by the Commission indicate that conditions can be included as part of the exemption which will discourage many agencies from following the application process and, indeed, from building these vitally needed conduit hydroelectric facilities. The Commission asserts in Section 4.93(f) that it has the right to prescribe terms and conditions as part of any exemption to protect life, health, and property; protect water supplies related to agricultural, municipal and industrial consumption and preserve, develop, or utilize in the public interest the water resources of the region surrounding the proposed hydroelectric plant. The threat of such conditions discourages any initiation to develop the needed energy resources.

Applicants are further discouraged from applying for exemptions because there is no time limit within which the Commission must act upon applications for exemption. Although reference is made in the regulation to a 90-day period within which action must be taken, the Commission reserves the right to waive the 90-day period whenever it deems such action would be necessary. We, therefore, believe that the application and the exemption process unduly discourage the building of these vitally needed conduit hydroelectric plants.

It can be readily seen, we submit, that the construction of power plants on water distribution systems that will generate power incidental to the transportation of water in lieu of dissipating that energy potential creates no burden whatsoever on the body of water that was the original source of such water. The question naturally arises as to what purpose is served by compelling those who would build such facilities to apply to the Federal Government for permission. As indicated above, we have been unable to ascertain any beneficial purpose. While the Federal Energy Regulatory Commission has been cooperative and expeditious in approving our exemptions, with the flurry of new applications under the regular licensing procedure, it is hardpressed to meet its substantial responsibilities and certainly does not need the additional concern of reviewing and passing upon exemptions of small power plants which are incidential to existing water distribution systems. Those entities which have the potential for constructing such facilities should be encouraged to do so by eliminating compliance with wholly unnecessary governmental regulations.

Metropolitan is a relatively large public agency and has gone ahead with its hydroelectric power generation program despite having to comply with regulations promulgated under the above statute. Many smaller municipal water agencies have asked Metropolitan as to the feasibility and burdens of this energy production program. True exemption from such regulation could only encourage similar investigation and construction of small hydroelectric power facilities.

Therefore, we wish to recommend that Section 30 of the Federal Power Act be amended to clearly exempt these small water conduit hydroelectric plants from the licensing requirements of the Federal Power Act. This could be simply accomplished through the adoption of H.R. 4485 introduced by Rep. Carlos Moorhead, the ranking minority member of the Subcommittee on Energy Conservation and Power. Acopy of that bill is attached to my statement.

We urge your consideration of this legislation. Thank you for the opportunity to testify.

97TH CONGRESS
1ST SESSION

H. R. 4485

To reform the Federal Power Act to encourage conduit hydroelectric facilities.

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 15, 1981

Mr. MOORHEAD introduced the following bill; which was referred to the Committee on Energy and Commerce

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A BILL

To reform the Federal Power Act to encourage conduit hydroelectric facilities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Conduit Hydroelectric Act of 1981".

SEC. 2. FINDINGS AND STATEMENT OF PURPOSES.

(a) FINDINGS.—The Congress finds that conduit hydroelectric power is a clean, economical energy source with the clear potential of conserving significant amounts of energy.

(b) STATEMENT OF PURPOSES.—The purposes of this Act are—

(1) to conserve energy;

(2) to enhance environmental quality; and

(3) to benefit consumers of electrical power and water by restraining the costs of providing such services.

SEC. 3. CONDUIT HYDROELECTRIC FACILITIES.

Section 30 of the Federal Power Act (16 U.S.C. 823a) is amended to read as follows:

"SEC. 30. Any facility (excluding any dam or other impoundment and any facility located on Federal lands) constructed, operated, or maintained for the generation of electric power which utilizes for such generation only the hydroelectric potential of a manmade conduit operated for the distribution of water for agricultural, municipal, or industrial consumption and not primarily for the generation of the electricity shall be exempt from the requirements of this part, including any license requirements of this part.".

○

Senator **Jackson**. Mr. Chairman, might I ask a question of the representatives here from the State of Washington?

How much of a difference would the exemption of the 25 megawatts make in our State looking at projected projects?

Mr. **Campbell**. An exemption, complete exemption from licensing for 25 megawatts, a FERC exemption, it would make a significant difference because a great number of the projects in our State are 20 megawatts or less.

One of the problems, though, with exemptions, although superficially they appear to be the answer to this great backlog, I think what they do is pass on the delay to the State level. A benefit of having FERC involved is that it is a single, centralized agency with ultimate jurisdiction to decide all disputes relating to hydroelectric generation, and so if there is a proliferation of exemptions, the problem is that the disputes either will not be resolved at one central agency, or they will be subject to litigation and delay down the road.

Senator **Jackson** [presiding]. Of course, it is very difficult for us—we could do it—to preempt State authority. I say we could preempt the State regulatory authority up to that level if we wished, but I think that is a very difficult thing to do.

Mr. **Campbell**. Well, there are not only State utility regulatory commissions such as in Washington, but also a number of jurisdictions with the power to issue permits, management agent permits, water rights permits, and all of the number of other permits that are necessary to develop a site. If one or more of those agencies decides for unreasonable grounds not to grant the permit FERC does have authority to override that determination at this time.

Senator **Jackson**. Yes. I understand that. What is the length of time involved currently in applying to FERC for a judgment decision that has been entered, on the average? You have only, what, one or two cases?

Mr. **Campbell**. We don't have a large sample. As you know, when you attended the commissioning of the Russell Smith Power Plant, that was the first one on line. That license was issued I believe in under a year. That was a 6-megawatt plant. Even more remarkable, though, was the Summer Falls license which was issued in about 1 year's time.

Senator **Jackson**. Which is rather remarkable time-wise compared to the delays that have occurred in the old Federal Power Commission and the cases that have gone on for an unnecessary period of time.

It seems to me that on these projects, the small hydroprojects which I sponsored some time ago, you know, on the legislation regarding guaranteed loans to the municipalities and so on, that there really isn't the need for the elaborate hearing process. They are pretty much cut and dried. The real problem is the allocation of costs here that you have gone into previously, the 50-percent business which poses your biggest problem, does it not?

Mr. **Campbell**. Yes, it does.

Senator **Jackson**. In terms of the irrigators and the users of water.

Mr. **Campbell**. And I think more broadly when applied to any municipality which has paid the construction costs, whether it be an irrigation facility or flood control dam; I think that the same concerns are applicable to any municipal payer.

Senator **Jackson**. Mr. Richardson?

STATEMENT OF ALAN H. RICHARDSON, LEGISLATIVE DIRECTOR AND LEGISLATIVE COUNSEL, AMERICAN PUBLIC POWER ASSOCIATION

Mr. **Richardson**. My name is Alan Richardson. I am the legislative director and legislative counsel for the American Public Power Association. As you know, APPA is the national service organization representing over 1,750 local public power systems in 48 States, American Samoa, Guam, Puerto Rico, and the Virgin Islands. Collectively these public power systems serve over 13.5 percent of the Nation's electric consumers. While the majority of the public power systems are located in communities with populations of 10,000 or less, several of the Nation's largest cities, including Los Angeles, have their own local and electric utility system.

In the interest of time, Mr. Chairman, I do have a prepared statement which I ask be submitted in the record, and I will attempt to summarize this.

Senator **Jackson**. Without objection.

Mr. **Richardson**. The major point which I raised in my testimony includes the following: First, this has been discussed by many other witnesses in the hearing this morning, there have been numerous changes in the past few years which have greatly increased the value of our national hydroelectric reservoirs. Incentives have been provided to encourage the development of this resource in the form of tax credits, mandatory purchase requirements, public utility rate policy provisions relating to small power production, and so forth. All of these incentives have resulted in an avalanche of filings for preliminary permits and licenses.

The point most frequently impressed upon me by members of the association and the attorneys who represent these public power systems to combat this delay is the Commission itself must be provided with staff and resources necessary to process this avalanche of applications.

Orderly licensing of projects will be impossible if Congress fails to authorize the appropriate funds for this purpose. In addition, the Commission must exercise a leadership role in dealing not only with other Federal agencies, but in dealing with the States as well.

The Nation's water and river basin resources are subject to conflicting demands. Comprehensive development and the multiple-use concept embodied in the Federal Power Act have led to conflicts between Federal agencies each concerned with different aspects relating to the use or preservation of these resources.

We have heard a great deal about conflicts which arise in the licensing stage. It is also significant to note that I believe there are conflicts which can arise in the permit stage or following the issuance of a permit. One instance in particular which we discovered is a case of a public utility district in the State of Washington which applied for a permit to study the feasibility of a hydro site and was advised because there was a question of entry into national forest land they had to get a permit or had to get permission from the Forest Service to gain access to this land. The Commission contacted the Forest Service. The Forest Service advised the Commission that what this applicant had to do was get what they termed a "memorandum of understanding" in order to gain access to the land, so the Commission included this as one of the conditions of the permit, and further stated that if this condition were not met within a 90-day period, the permit might be subject to forfeiture.

The applicant, the public utility district, upon receiving this permit, went to the regional Forest Service office and inquired as to how he might get this memorandum of understanding and was advised quite simply that the Forest Service had no such procedures for issuing such a memorandum of understanding. All he could do was to get a formal entry permit. Obviously he was placed in a catch-22 situation, being required to get something which the Federal agency cannot issue and being required in addition to obtain this within a 90-day period when the Forest Service advised him that the formal permit could not be issued in less than 6 months.

This may be an unusual example, but quite clearly Federal agencies have to realize what conditions they are imposing upon third parties to make sure those conditions are reasonable, and in addition, the Commission, while the requirement that it has recently imposed that developers exercise due diligence in processing their permit and provide them with information on a timely basis to show they are progressing toward development of the project—the time frames which they impose must be reasonable.

We would suggest that in the case of an action by a third party, particularly which is another Federal agency, the time frame burden deadline should be imposed not upon the preliminary permittee but upon that Federal agency. For example, in this case the Forest Service should be required to provide to the Commission evidence that the permittee has received the required permission to enter that land.

As you know, and that is discussed here also, the States and municipalities do enjoy a statutory permit and licensing preference, and some private developers have attempted to turn this to their own advantage through filing what has been called hybrid applications frequently offering municipalities a sum of money in order to gain access to this permitting or licensing privilege or priority.

The Commission very recently ruled that hybrid applicants are not entitled to statutory preference. Nevertheless, they did say they would not inquire behind the applicant itself. If a municipality presented the application, even in the case where there was some evidence that behind the municipality was a private developer which was simply trying to abuse the municipality's preference provision to its own advantage, they would not inquire into this.

We believe that the Commission's refusal to inquire behind these applications, what might be referred to as, referred to by the Commission as hidden hybrids, is in error and may well encourage a pile of hidden hybrids, and we believe that it is plain in the testimony that this will work not only to the disadvantage of pure municipalities, but the private developer as well.

We do not believe that radical alterations in the licensing process are appropriate or necessary. We would concur with the statements which have been made by other witnesses here at this table this morning that the Commission should be retained as a centralized licensing agency.

With respect to preliminary permits, we believe they should not be discontinued. They do provide developers with protection. They can be obtained at minimal expense, and they do promote orderly development of undeveloped as well as underdeveloped sites. Licenses insure that consideration would be given to competing uses of the resource, facilitate the financing of projects, and they protect the investments for developing entities.

A great deal has been said concerning license exemptions. As Mr. Ellis said this morning, some would not agree with the license exemption scheme which did not protect the 7(a) preference of States and municipalities. Certainly that is our position. We have seen an expansion of the exemption program which has worked to the disadvantage of States and municipalities in exercising their licensing priority, but there are other reasons why we would also oppose an expansion of this licensing exemption authority.

We believe, first of all, from a water policy perspective, that proposal is incompatible with the entire concept of, philosophy of the Water Power Act which is the concept of comprehensive development.

From an energy perspective we feel sites may not be developed to their full potential since some capacity may be ignored in order to qualify for the 15 megawatt or 30 megawatt or whatever limit is established. We have already seen the possibility of this occurring in the implementation of the Commission's existing rules where they will not entertain a competing license application in the face of a previously filed exemption application unless the potential licensee proposes to develop the site to 7.5 megawatts or more.

If the same arithmetic were used with, for example, a 15 megawatt exemption, presumably the Commission would not entertain a license application in competition with that exemption application unless the project were 22½ megawatts.

Also from a purely practical standpoint, a license is a valuable document which provides protection to the developer. It does guarantee compensation to those adversely affected by the project, and perhaps most important, it does facilitate financing.

One final point I would like to mention, and that is because of the tremendous increase in interest throughout the country in developing our resources, obviously the Commission has been overburdened. Application is being filed for permits, exemptions, and licenses on a regular basis, and there is intense competition for these sites. It is imperative for the Commission to monitor the progress of the entity who receives this Federal right to exploit what we regard and what is clearly a public resource, and to withdraw this right if studies are not undertaken and/or construction commenced within a reasonable period of time.

Thank you very much.

[The prepared statement of Mr. Richardson follows:]

Statement of
Alan H. Richardson
Legislative Director & Legislative Counsel
American Public Power Association
Before the Subcommittees on
Water and Power and Energy Regulation
of the
Senate Committee on Energy and Natural Resources
October 19, 1981

My name is Alan Richardson. I am the legislative director and legislative counsel for the American Public Power Association. APPA is the national service organization representing over 1,750 local public power systems in 48 states, American Samoa, Guam, Puerto Rico and the Virgin Islands. Collectively, local public power systems serve over 13.5 percent of the nations's electric consumers. While the majority of the public power systems are located in communities with populations of 10,000 or less, several of the nations's largest cities, including Los Angeles, have their own local electric utility system.

Publicly owned utilities have long been involved in hydroelectric resource development. As instruments of the municipalities which they serve, they have recognized that capturing the hydropower potential of flowing water represents only one of many uses of this valuable, renewable resource. The conservation movement of the early part of this century -- which formulated our nations's water development policies -- clearly recognized the desirability of multipurpose water development projects and further, understood that this multiuse philosophy was extremely compatible with public development. For that reason, among others, states and municipalities were encouraged to take an active role in developing for public benefit this important resource.

The philosophy for water resource development so clearly articulated in the Federal Water Power Act continues to guide the nation in harnessing and developing this resource to its fullest potential. Because of the long involvement of public power in this area, I am particularly pleased to have this opportunity to discuss with you our views on the current status of the Federal hydroelectric licensing process.

At this point, I would like to briefly summarize the major points covered in my testimony.

o Numerous changes in the past few years have greatly increased the value of our national hydroelectric resource. Incentives have been provided to encourage the development of this resource. These incentives have resulted in an avalanche of filings for preliminary permits and licenses.

o FERC must be provided with the staff and resources necessary to process these applications. Orderly licensing of projects will be impossible if Congress fails to authorize and appropriate sufficient funds for this purpose.

o The nations's water and river basin resources are subject to conflicting demands. Comprehensive development and the multiple use concept embodied in the Federal Power Act have led inevitably to conflicts between Federal agencies each concerned with specific aspects relating to the use or preservation of these resources. Means must be found to resolve these conflicts as expeditiously as possible without at the same time ignoring this central multiple use theme.

o States and municipalities enjoy a statutory permit and license preference which some private developers have attempted to turn to their own advantage. Care must be exercised to insure that this preference is not abused.

o Radical alterations in the licensing process are not necessary. Preliminary permits provide developers with protection, may be obtained at minimal expense, and promote the orderly review of undeveloped and underdeveloped sites. Licenses insure that consideration will be given to competing uses of the resource, facilitate the financing of projects and protect the investments of the developing entities.

o Finally, it is imperative that the Commission monitor the progress of potential developers to insure that they proceed as expeditiously as possible to study the feasibility of and thereafter construct new projects.

Development Incentives and the Increased Hydro Licensing Workload

It is not surprising that, during the last few years, national interest in hydropower has been rekindled. National energy policy coupled with economic changes have forced us to view in a new light previously undeveloped or underdeveloped hydroelectric sites. Congress has taken many steps to encourage the development of our national energy resources to permit us as a nation to escape from our addiction to imported fossil fuels. In the hydroelectric area, investment tax credits for hydroelectric expenditures have been increased from 10 to 21 percent. Non-utility involvement in hydro development has been encouraged through provisions of the Public Utility Regulatory Policies Act, under which developers of small scale hydroprojects were freed from certain regulations governing electric utilities. Developers of small projects have been guaranteed a market for the power they produce. The Federal Energy Regulatory Commission has been directed by Congress to establish simplified and expeditious licensing procedures for small hydroelectric projects. Conduit hydroelectric facilities of 15 megawatts or less may be exempted from FERC licensing requirements. This license exemption authority was last year expanded by a provision in the Energy Security Act to encompass projects of 5 megawatts or less located at existing dams. Because of the marginal economics of many small hydroprojects, the Congress authorized a low interest feasibility and construction loan program which proved to be of significant benefit to potential developers. All of these recent Congressional actions have made many of the nation's small, and not so small, hydro sites prime targets for development.

These incentives, however, have placed a very heavy burden on FERC. There were fewer than 3000 docket entries at the Federal Power Commission from 1920 to 1976.

In 1976, there were less than 1000 active hydroelectric projects. These figures have increased dramatically in the past few years. In June of this year alone, the Federal Energy Regulatory Commission received almost 300 permit and license applications. This, of course, is only the tip of the iceburg. Permits that will mature into license applications are difficult and time consuming to process.

Unfortunately, increases in Commission funding for hydro licensing activities has not kept pace with the dramatic increase in workload. Notwithstanding this fact, however, the Commission through regulatory modifications and other changes has been able, for the most part, to adequately process this avalanche of paper.

In preparing for this testimony, I questioned a number of public power system managers and their attorneys concerning problems encountered in working with FERC. I sought their advice on alternatives to the present process as well as solutions to any particular problems they had encountered. With respect to preliminary permits for minor projects, particularly in uncontested proceedings, it appears from this hasty and informal survey that the Commission has little difficulty processing applications and issuing permits within four to six months.

I did, however, uncover many instances of process delays. Two cities in California, for example, filed a competing application for a preliminary permit to study the feasibility of a 140 megawatt project. No action was taken for over a year and the permits were subsequently superceded by the filing of an amendment to a license held on an upstream project. Delay precluded consideration of the feasibility of this new project under the protection of permit, and an opportunity to determine whether a project could be constructed which would maximize the benefits derived from this river was lost. A city in Massachusetts filed a preliminary permit application over a year ago to study the feasibility of installing a third unit at a site which has two existing units licensed by the Holyoke Water Project. Company. No action has yet been taken. A public utility district in Washington has been working for two and one-half years to secure a license on a project it wants to construct. Repeated trips to Washington, D.C. were necessary to move this application through the regulatory process.

There were two major recommendations for overcoming these delays. First, the Commission needs additional resources. While further refinement of the process might help, additional money is essential if the process is to operate as intended. Second, the Commission should exercise greater leadership in order to resolve the inevitable disputes which arise between competing developers and between developers and the numerous state and Federal agencies which have a legitimate interest in the use of this resource.

Conflicts with Other Federal Agencies

Conflicts with other Federal agencies can also cause problems and delays for hydro developers. These problems are most frequently associated with the licensing as opposed to the permitting process. Numerous statutes, administered by other Federal agencies, must be considered before a license is issued. Other witnesses both today and in your previous hearings, have discussed some conflicts which arise under such statutes as the Endangered Species Act, the Wild and Scenic Rivers Act, the Fish and Wildlife Coordination Act, and many others. Problems, however, can also arise in the permitting state, as demonstrated by the recent experience of a Washington Public Utility District.

The District applied for a preliminary permit to study the feasibility of a project. To conduct this study it was necessary to gain access to national forest land. This access had to be obtained from the U.S. Forest Service. Recognizing this, FERC contacted the Forest Service prior to the issuance of the permit, and the Service recommended that there be included in the permit a requirement that the permittee obtain a memorandum of understanding from the Service setting forth the conditions governing access to the land. The Commission inserted this condition in the permit, and further, consistent with its policy of requiring developers to exercise due diligence in studying projects for which permits have been issued, required that the memorandum be filed with FERC within 90 days. Failure to comply could result in the withdrawal of the permit.

On receiving the permit, the District requested from the regional Forest Service office the required memorandum of understanding. The District was promptly advised that the Forest Service does not issue such documents. Access to Forest Service land for a commercial purposes can only be granted through the issuance of a formal permit. The District also learned that such a permit generally can't be obtained in less than six months.

The District here has been placed in a classic Catch 22 situation. The Forest Service requested the permittee to obtain a document which isn't issued, and the Commission required that this document be obtained within an unreasonably short period of time.

Obviously, steps must be taken to prevent such situations from arising in the future. Federal agencies should be familiar enough with their own procedures to recognize what obligations they can and cannot impose on third parties. While we support the Commission's desire to force permittees to meet certain deadlines, such deadlines must be reasonable. It does not seem reasonable for the Commission to impose a deadline when the actions subject to that deadline are conditioned on Federal agency actions. It seems far more logical in such cases for the Commission to place the burden directly on the Federal agency involved rather than on the permittee.

Insuring Comprehensive Development

The "new" economics flowing from the Arab oil embargo and the dramatically higher prices for oil and natural gas have made economic projects which were not previously feasible. Some of these potential projects, if developed, would have an adverse impact on previously licensed projects located up or down stream.

The Commission has recently concluded that it cannot accept preliminary permit or license applications for projects which would substantially alter a previously licensed project unless the existing licensee gives consent in advance. This conclusion was based on the language of section 6 of the Act which states in part that "licenses...may be altered or surrendered only upon mutual agreement between the licensee and the Commission after thirty day's public notice."

The Commission, however, is under a conflicting obligation under section 10(a) of the Act to insure the most comprehensive development of the Nation's waterways. In some cases, the most comprehensive development may require a substantial alteration of an existing project. The existing licensee, of course, would be compensated for any damages under section 10(c) of the Act.

This is a difficult question, involving the rights of existing licensees, the interests of potential developers and the underlying goal of the Act, that of comprehensive resource development. I have no answers to offer. It is a question, however, which may deserve further consideration.

Hybrid Applications

Another problem of recent concern to public power systems throughout the country involves the priority assigned to hybrid permit or license applications. This term -- "hybrid application" -- has been used to characterize an application filed jointly by a private developer and a public entity. As you know, the Federal Power Act provides a permit and license preference to public entities. Over the past year or so, hybrid applications have been submitted in an attempt to secure this preference, to the obvious detriment of both public entities and competing private developers.

Until recently, the Commission had no policy concerning these hybrids, and all cases where hybrids were in competition with other applicants were held in abeyance. Last month, the Commission resolved this question, holding in the City of Fayetteville case that hybrids should not receive preferential treatment. In support of its conclusion, the Commission observed that the holding was clearly consistent with the plain meaning of section 7(a) of the Federal Power Act. Further, while the legislative history did not directly address the issue, if minimal municipal participation entitled the hybrid application to preference, then the preference for the "pure" municipality would be canceled out. The result, noted the Commission, "would be a triumph of form over substance which would contradict the statutory purpose of encouraging public control of waterpower development."

We supported this position and are very pleased with the Commission's ruling. We are concerned, however, that "hidden hybrid" applications -- applications filed in the name of a municipality where the real party in interest is a private developer -- may frustrate the clear holding in this case. The Commission itself recognized that "it can be expected that hybrid joint venturers may attempt to circumvent the policy by concealing the existence of the non-municipal partner and filing applications in the municipality's name only."

The Commission is convinced that in the end, such a maneuver would be self defeating. Hidden partners would have to be revealed at the licensing stage, and a license application by joint applicants where the permit had been issued to the municipality only, would not be entitled to any permit-based preference or priority. Thus, in three recent cases, the Commission held that it did not need to investigate relationships which the municipal applicant might have with other entities.

We are sympathetic with the tremendous workload facing the Commission. However, it appears to us that the refusal of the Commission to investigate a well founded allegation that there is a hidden hybrid may encourage such filings. Further, we do not believe that this problem can be adequately corrected at the licensing stage.

Potential competitors for a site who are unsuccessful because a permit is issued to a hidden hybrid applicant, will be unlikely to expend the time and funds necessary to collect the information required to prepare a license application. Thus, the potential for competition for a license when the permit holder's hidden partners are subsequently revealed is greatly diminished.

Quite obviously, the best solution is an investigation when the facts indicate the probability of hidden partners. (It is interesting to note here that in two of the three cases where this issue has arisen, the municipality which received the permit had originally filed as a co-applicant with a private entity. In both cases, the permit applications were amended to delete the private partner.) Indeed, an investigation of a possible hidden relationship would seem consistent with prior Commission statements concerning the preliminary permit process. The Commission has stated, for example, that "Congress intended permits to be issued only to earnest and vigorous developers, ready and able to proceed with at least the preliminary stages of development." Chatanika Power Co., Inc. (1961), 26 FPC 751.

Another possible solution, admittedly less adequate than an investigation, would be to require the entity receiving the permit to certify that it intends to develop and control the project in its own name once feasibility is established.

There is also a possibility that the relationship might remain hidden until after the license is issued. Thereafter, the licensee might seek Commission approval to transfer the license to the private partner. The Commission could, and certainly should, refuse to allow such a transfer. We believe that the Commission should address this issue and establish policy guidelines to govern requests for license transfers from preference to non-preference entities.

Importance of the Preliminary Permit

Earlier this year, the Commission solicited comments on whether it should discontinue the preliminary permit process. Most of those who submitted comments opposed this suggestion. The preliminary permit provides small developers with needed protection by guaranteeing a licensing priority. Further, the process generally is neither expensive nor burdensome.

From our perspective, the proposal on its face would not harm directly the competitive position of municipalities, since the statutory preference is applicable to competing license applicants where there is no preliminary permittee. The potential harm to municipalities -- and, I believe, to most small developers -- comes in a more subtle way. Absent the permit phase, project development may simply depend on which party has the fastest engineers and the wealthiest bidders.

Certainly the elimination of the preliminary permit phase would significantly reduce the Commission's caseload. Because of the higher cost involved with the filing of a license application, eliminating this phase might also reduce the number of less than serious applications. However, it would probably have the unfortunate result of reducing the number of applications generally since only the more worthy sites will be proposed for development. The end result might well be to discourage hydro development at marginal sites. The costs associated with gathering the requisite data for such sites without having in hand the permit and the protection it affords may simply be considered too great a risk.

License Exemptions

Another recent proposal advanced by the Commission is to greatly expand the license exemption authority from the current 5 megawatt limit applicable only to existing dams, to an upper limit of 15 megawatts at all potential sites. This proposal if enacted, would mark a return to the water development policy of the early days of this century when this valuable public resource was given away, for nothing and forever. We strongly oppose this proposition.

Clearly, an expansion of the exemption program would have an adverse impact on state and municipal preference. We have already seen this preference erroded under the Commission's regulations which establish procedures for securing exemptions for projects of 5 megawatts or less. From a water policy perspective the proposal is incompatable with the concept of comprehensive development. From an energy perspective, sites may not be developed to their full potential since some capacity may be ignored in order to come within the 15 megawatt limit. From a purely practical standpoint, a license is a valuable document which provides protection to the developer, guarantees compensation to those adversely affected by the project, and perhaps most important facilitates project financing.

There is one final point which I would like to mention briefly. We are here today because of the tremendous interest throughout the country in developing our water resource. Applications are being filed for permits, exemptions and licenses at a record pace. There is intense competition for the available sites. It is imperative that the Commission monitor the progress of those entities which receive this Federal right to exploit this public resource, and to withdraw this right if studies are not undertaken or construction commenced within a reasonable time. The Commission clearly recognizes its obligation here. For example, preliminary permits are no longer issued for a three year peirod if a shorter period of time is more appropriate. Permits are conditioned on the permittee's performance of certain tasks within specified periods of time. Exemptions are likewise conditioned to insure that sites once exempted from licensing are in fact developed. Monitoring the activities of these developers is a substantial burden on the Commission. Even with the best of intentions, the Commission cannot function effectively if it is deprived of the tools to do the job. So once again I will reemphasize the importance of insuring that the Commission is properly equipped to deal with the problems which confront it.

Senator **Humphrey** [presiding]. Thank you.

Mr. Ferguson?

STATEMENT OF JOHN T. FERGUSON II, LEGISLATIVE COUNSEL, GEORGIA-PACIFIC CORP., ON BEHALF OF THE AMERICAN PAPER INSTITUTE

Mr. **Ferguson**. Chairman Humphrey, I am appearing today on behalf of the American Paper Institute or API. API has some 170 members who produce 90 percent of the pulp, paper, and paperboard in this country. I have provided some background in my written statement concerning the involvement and the interest of the API members in the hydropower licensing program, and I won't go into that now.

I would like to briefly summarize the comments which we have submitted in writing concerning three general areas of problems which we have either experienced or perceived with regard to the Federal hydropower licensing program.

Those three general areas are, No. 1, exemptions from licensing; No. 2, the preemption of site owner property rights which is occurring under the present program; and No. 3, the problems with relicensing, and I want to make some comments on license turnaround.

First, with regard to exemptions from licensing, we believe that the usefulness of the exemption process is limited due to several features of that process, and consequently, it hasn't seen as broad a use as it might.

First of all, I would identify the 5 megawatt ceiling on projects which we think is too low. One recent FERC staff estimate was that as many as 50 percent of the applications that had been filed in the past fiscal year were for projects over 5 megawatts. We are not talking about very large projects when we are talking about a project in the range of 5 to 15 megawatts. We think that a project up to 15 megawatts can be exempted without any consequences, and that is what we suggest that the Congress do.

Second, in our view, the limitation on the exemption process to existing dams is not, or the distinction drawn between that and projects requiring new construction is not one which makes much sense. In many cases, there are a number of projects which can be built requiring new dam construction which is of very little environmental impact, in fact, no impact on navigation, and we would strongly urge you to consider lifting this restriction that exists right now on applying the exemption process to projects requiring new dam construction.

Third, we would urge you to consider changes in the present exemption process which would permit fish and wildlife agencies at both the State and Federal level to suggest but not dictate exemption terms and conditions. Under the present licensing program, of course, that is the case, and we think that the exemption process should be made comparable to the licensing program.

Turning to the second area of problems which we have identified, the preemption of site owner property rights which is occurring under the present system, we believe that this is one of the most serious problems in the current system and one which requires immediate attention.

There are in our view a number of sound reasons why the licensing process should accord some significance to the fact of property ownership. First of all, we agree fully with the views which were expressed in the hearing earlier this year up in New Hampshire that regardless of how urgent our energy needs may now be, quote, property rights, should come before, even addressing the energy shortage, certainly with regard to smaller sites. Our concern quite frankly is in the present stampede to stake out claims to hydro sites, we may be losing sight of our long-standing national commitment to protect the private property rights of the citizens of this country.

Second, we believe that according some significance to property ownership would permit us to benefit from the fact that generally speaking, a site owner is the person who is going to be in the best position to see to early development of his property. By definition, the site owner already has title to the property. He has access to the property, and we think generally speaking he is going to be the person most knowledgeable about the characteristics of the property and its development potential.

Third, the type of change that I am suggesting be made in the present system would we believe reduce the enormous volume of applications that are presently pending at the Commission. We would see great savings in time in the administrative agency, and also we think savings in time in court later on. I have cited an example of a case where a project was licensed back in 1979 up in Maine, and today that project is probably not any closer at all to being completed than it was when it was licensed back in 1979.

Fourth, we think that providing some protection to private property rights would have the effect of bringing some rationality to the present process, and it would also have the effect of making the present process more efficient than it now is. I don't think any Government agency or program is as efficient as the free market in determining which of our energy resources should be developed, how much of them should be developed, when they should be developed, and who should develop them.

I have cited in my written statement an example of perhaps the worst that the present system can produce, an example involving a case that Georgia Pacific has been involved in over at the Commission. Again, I won't go into the facts of that proceeding, but I will simply say that we were absolutely astounded that in spite of the fact that we have moved vigorously toward trying to develop a piece of property that we own, in spite of the fact that we were the first to file a preliminary permit application for that site, in spite of the fact that we were the first to file a license application for that site, we are in an appellate process now at the Commission trying to reverse the decision made by the staff to the effect that the Commission will not even accept or license an application from us, and what is even more incredulous about this whole case is that we are being told in spite of the fact that we filed first for the site, to allow us to develop the site would delay the proceedings of the Commission.

The last in a group of problems that I want to mention are problems surrounding the relicensing process and the license turn. We know the Federal Power Act presently permits the Commission to issue licenses for up to 50 years. As you also know, there is presently no preference built into the relicensing process for a person who holds a license.

We think that these two aspects of the present system are discouraging optimum development of hydro resources, and we would suggest two changes be made in the present system of hydro licensing or relicensing.

No. 1, we would urge you to consider increasing the license term from 50 to 75 years, and No. 2, we would urge you to consider granting some sort of preference to existing license holders. I again cited an example of a company in our industry which is now operating a site of some 10 megawatts which could be upgraded to about 50 megawatts. They are hesitant about doing this, however, because the time remaining on their license right now is not enough to support the capital investment, and second, they would have no preference in relicensing so they may well upgrade the project and then lose it to some outsider.

I believe that concludes my summary of my testimony. I would ask that my written comments be included in full in the record, and I will be happy to answer any questions.

Senator HUMPHREY. Fine. Thank you very much.

Mr. FERGUSON. I would also like to ask that we be permitted the opportunity to supplement our testimony today.

Senator HUMPHREY. Without objection, it is so ordered.

[The prepared statement of Mr. Ferguson follows:]

Statement of

JOHN T. FERGUSON, II
Legislative Counsel, Georgia-Pacific Corporation

on behalf of

THE AMERICAN PAPER INSTITUTE

Chairmen Humphrey and Murkowski, members of the Subcommittees, I am John T. Ferguson, II, Legislative Counsel for Georgia-Pacific Corporation. I am appearing today on behalf of the American Paper Institute. The American Paper Institute, or API, is the national trade association of the pulp, paper and paperboard industry in the United States. Its some 170 members produce 90% of the nation's pulp, paper and paperboard.

We appreciate the opportunity to relate to you some of the problems which the members of API have either experienced or perceived with regard to the federal regime of hydropower regulation and to outline for you proposed solutions to some of those problems.

But, first permit me to establish some context for my testimony concerning federal hydropower regulation. Dependent upon the land to produce wood fiber for our manufacturing operations, API member companies are substantial timberland owners. In addition, a large number of the paper industry's manufacturing facilities are located on rivers. It comes, perhaps, as no surprise, therefore, that API member companies own a number of both developed and undeveloped hydropower sites.

Georgia-Pacific, for example, owns fourteen potentially developable hydropower sites which are now or recently have been the subjects of either preliminary permit or license proceedings at the Federal Energy Regulatory Commission.

Georgia-Pacific currently holds preliminary permits for four of these sites, although two of the permits are being contested now before the Commission by other parties and could become the subject of litigation. Competing applications have been filed for ten of the fourteen sites I mentioned, and competing applications may yet be filed for two more of these sites.

The sites owned by API member companies vary widely in location and characteristics. Many of the sites are located in either New England or the Pacific Northwest. The development potential of the sites ranges from less than two megawatts to more than fifteen megawatts, although generally the sites in question have a development potential of fifteen megawatts or less. Some of the sites are located at existing dams, and some of them have been previously used to produce power. Our industry at one time used hydromechanical power to grind wood for the production of paper, and some of the sites which we own are integral parts of existing pulp and paper mills. Finally, I should note that some of the sites which API member companies own are now in use producing electricity for our paper and related manufacturing operations.

With that brief background, let me turn to the substance of my testimony. I intend to address, in order, three general topics: license exemptions, preemption of site owner property rights, and relicensing including license term.

LICENSE EXEMPTIONS

Section 408 of the Energy Security Act empowered the Commission to grant exemptions from the licensing requirements of Part I of the Federal Power Act to hydroelectric projects of five megawatts or less at existing dams and impoundments. Previously, Section 213 of the Public Utility Regulatory Policies Act of 1978 had empowered the Commission to exempt from the Federal Power Act licensing requirements hydropower projects of fifteen megawatts or less installed in manmade conduits located on non-federal lands and used primarily for the distribution of water for agricultural, municipal or industrial purposes other than the generation of electricity.

The Commission has promulgated regulations which govern license exemptions and is currently granting such exemptions. We have found, however, that certain features of the exemption process have limited the usefulness, and thus the use of the exemption process. Consequently, the savings in time and Commission resources which were expected when the Commission was empowered to grant exemptions may not have been fully realized.

Why is the exemption process at times not an attractive or viable option for hydro developers? First, the five megawatt ceiling on exemptible projects, other than conduit projects is too low. A significant number of the applications filed this year with the Commission are for projects with a development potential of over five megawatts. One recent estimate by a member of the Commission staff is that some 50% of the approximately 1,800 applications filed during fiscal year 1981 were for projects of over five megawatts.

A project in the range of five to fifteen megawatts is not an extremely large project. In some cases with which I am familiar, for example, projects of this size can be installed at relatively low level dams operating in the run-of-river mode. We believe that with regard to projects of this size, the license requirements of Part I of the Federal Power Act are unnecessarily stringent. Therefore, we support raising the ceiling on exemptible projects to fifteen megawatts, and are of the view that if this were done and existing law were changed in two other respects which I will mention in a moment, the exemption process would see greater use.

The second reason why the use of the exemption process has been limited is that small projects requiring new dam construction cannot be exempted. We believe that in many instances, this distinction between projects at existing dams, which may qualify for an exemption, and those requiring the construction of a new dam, makes no sense. For example, the topography at some potential hydro sites, particularly in the Pacific Northwest, is such that construction of a low level dam sufficient to support the installation of a small hydroelectric project would have little, if any significant effect on the environment and no effect on navigation. In addition, some projects which would require only the repair of an existing, breached dam do not now qualify for an exemption. We are of the view that the exemption process would see greater use without any ill consequences if the exemption authority of the Commission were extended to include projects which involve new dam construction.

I am aware that, within the last few days, the Commission has taken action to amend the regulations applicable to exemptions for projects requiring dam reconstruction or construction of so-called diversion structures. I have not, however, had an adequate opportunity to review the action taken by the Commission in this regard and cannot, therefore, comment on it today.

The third reason why the exemption process is not often an attractive option for hydro project developers is that the Commission is required by current law to include in any exemption all terms and conditions specified by federal and state fish and wildlife agencies. In a license proceeding, by contrast, fish and wildlife agencies may suggest, but may not require that specific terms and conditions be imposed upon a hydro project developer. As a consequence, we believe that project developers would be much more apt to use the exemption process if existing law were changed so that fish and wildlife agencies could suggest, but not dictate exemption terms and conditions.

PREEMPTION OF SITE OWNER PROPERTY RIGHTS

The members of the American Paper Institute would suggest that one of the most serious problems with the current hydropower licensing program is the preemption of site owner property rights which the program permits. A site owner who loses the race to the Commission to file an application for a site may lose not only the right to develop the site but also title to his property. In addition, as a result of the preference given municipalities and states by Section 7(a) of the Federal Power Act, even winning the race to the Commission may not be enough to avoid losing ownership of a hydro site.

There are, in our view, sound reasons why the federal government should accord some significance to the fact of property ownership in hydropower license proceedings.

Perhaps the most compelling reason why the existing license process should be altered to recognize and protect the property rights of site owners was stated by Senator Humphrey during a hearing earlier this year in New Hampshire. During that hearing, Senator Humphrey asserted that however urgent our energy needs may now be, "property rights should come before even addressing the energy shortage, certainly with regard to smaller sites."

We are concerned that in our efforts to encourage hydropower development - efforts which have led to a stampede to stake out claims for hydropower sites - we not lose sight of or weaken in our commitment to the protection of private property rights. The issue, as Senator Humphrey has stated it, is one of national priorities. We recognize the value of hydropower as a potentially plentiful, renewable source of energy, and we fully support its development. We firmly believe, however, that the benefits which will flow from development of our hydro resources can be realized without abandoning, as we now may be, principles of private property which are as old as this nation.

Providing some protection to hydro site owners would permit us to benefit from the fact that, as a general rule, a site owner is the party in the best position to see that his site is developed at the earliest date that development is both possible and economic. A site owner, by definition, already has title to the property necessary to develop a project. As a result, he has ready access to the property and will likely be the most knowledgeable as to the characteristics and development potential of the property.

Taking action to remedy the problem of preemption of site owner property rights would surely reduce the enormous volume of competing applications which has flooded the Commission recently thus reducing administrative delays in granting the licenses necessary to construct projects. In addition, there would be no need for much, if not all of the preliminary permit program. And, other delays in developing hydropower sites would be eliminated. A proposed project in Maine which was licensed some time ago provides a good example of the delays which might be avoided.

A company which did not own the property necessary to develop the project to which I referred applied for a license in 1977. Today, that project, which was licensed in 1979, is probably not much closer to completion than it was when it was licensed. Efforts by the licensee over a period of one and one-half years to purchase the property necessary to develop the project were unsuccessful. The reasons for the failure of the parties to conclude a sale of the property vary, of course, depending upon whether one talks to the property owner or the licensee.

The licensee only this year initiated a condemnation proceeding for the property, a proceeding which could take some years to conclude. The licensee has had to obtain from the Commission an extension until May, 1983, of the date by which construction of the project must commence. I would be willing to hazard a guess that the delays which have occurred in developing this project will not prove to be anomalous if the license program is not changed.

I might note, incidentally, that it is my understanding that the licensee for the project which I have just discussed has recently agreed to sell the license for the project for some $200,000. Any transfer of the license will, of course, have to be approved by the Commission.

Limiting the impact of federal hydropower regulation on private property rights would result in more efficient, rational development of our hydropower resources. No government program or agency will ever be as efficient a mechanism as a free market for determining which and how much of our energy resources should be developed, when they should be developed or by whom. The kind of change in the hydropower permit and license programs which I have suggested would allow market decisions a greater role in shaping the course which hydropower development follows.

While the response of those who are participating in the current rush to stake out hydro claims is perhaps a rational response to provisions in the tax laws and the Public Utility Regulatory Policies Act of 1978 and to rising oil and natural gas prices, we are convinced that the "gold rush" which is underway is not contributing much toward the efficient, rational development of hydropower. Some individual developers - and I use that term with some reluctance since some "development companies" have been formed in the last year or two with few if any assets and have never developed anything except a large volume of paper for filing at the Commission - have filed fifty or more applications with the Commission. The present license system encourages applicants to file now and ask questions later. A claim, once established, can always be evaluated, and if it proves to have no value, abandoned.

The experience of Georgia-Pacific to date with a hydro site which we own is one of the best examples, perhaps, of the worst results that the present license process can produce. We purchased an unused, previously developed site in 1979. After some study of the development potential of the site, we filed a preliminary permit application in 1980. Our application, the first filed for the site, was followed early this year by a competing application filed by a development company. Since our application was first filed, and proposed to study the full development of the site, it was fairly clear that under the permit program as it is now administered by the Commission, we would receive the preliminary permit for the site.

A few minutes before the close of the period in which applications competing with our application could be filed, the company which had filed a preliminary permit application filed a notice with the Commission stating their intent to file within 120 days a license application for a project to compete with our proposed project.

We received a copy of this notice by mail several days later, at which time we spoke informally with the Commission staff about our filing a license application. Unless we also filed a license application, we could lose the right to develop our site since a license application generally takes priority over a preliminary permit application. We were told by the Commission staff that because we had not filed a notice during the public notice period for our preliminary permit application, the Commission probably would not accept a license application for the site from us.

We proceeded to file a notice of intent with the Commission stating our intention to file a license application within the 120 day period within which our competitor was to file its license application. The Commission staff, pursuant to a delegation of authority from the Commission, denied us the right to file our notice of intent to file a license application, and our appeal to the Commission from that action by the staff is now pending.

In the meantime, we prepared and filed within the 120 day period I have mentioned a license application for our site. Shortly after we filed, our competitor filed an application for a site across the river from our site.

Today, in spite of the fact that we were the first to file both a preliminary permit application and a license application in the proceeding which I have described, we have no real assurance that the Commission will even consider our license application, much less permit us to proceed with the development of our site.

Some will no doubt say that the changes in the license program which I have suggested are necessary will impede hydro development. We believe, for the reasons which I have already outlined, that such changes in the program will expedite the license process with the added benefit of treating property owners more equitably. Insofar as actual development is concerned, I can only state the obvious - hydro site owners respond to market forces such as increases in oil and natural gas prices and to government incentives such as PURPA and a 21% investment tax credit in the same manner as do non-owners.

PROJECT RELICENSING AND LICENSE TERM

Also of concern to many members of the pulp, paper and paperboard industry are the Federal Power Act provisions governing the term and renewal of licenses. The Commission is authorized by Section 6 of the Act to issue licenses with a maximum term of fifty years. When a license expires, no special consideration is accorded the existing licensee in relicensing a project. He stands on exactly the same footing as any other person who might seek to obtain a license for the project. The municipal preference, which I mentioned earlier, is also operative in relicensing proceedings.

To date, little attention has been paid to the relicensing process. Now, however, that process is of increasing concern as older licenses begin to expire and opportunities arise to modernize and expand existing projects. Unfortunately, close scrutiny of the relicensing process reveals flaws which threaten optimum development of hydropower.

In particular, the present law discourages investment in the upgrading of existing projects. The evolving technology of low head hydroelectric generation and developments in dam design and construction are making expansion of generation capacity feasible at a number of older licensed projects. There is every reason to anticipate that future technological advances will obsolete the projects of the 1980's before their licenses expire, as well.

When a project is upgraded, however, the licensee must obtain an amendment of his license, in which case the license will still expire at the end of its original term; or, he must initiate an entirely new license proceeding for the project. In the first case, there may not be sufficient time left before expiration of the license for the developer to recoup his capital investment and earn a reasonable return. The second option, relicensing, is not a satisfactory alternative either because there is no guarantee that the existing licensee can win the ensuing battle for a new license for the project. As a result, plans for upgrading existing projects may simply be shelved, the nation losing the benefit of substantial new hydroelectric capacity which would otherwise be brought on line.

The dilemma now facing one member of the paper industry is a good example of the problems I have just discussed. This company is currently operating a project of approximately ten megawatts under a license which expires in about fifteen years. The project can be upgraded to a capacity of fifty megawatts, however, with an investment of $50 million. The company does not want to proceed by amendment of its license because the fifteen years remaining on the existing license is not enough to justify such a large capital investment. On the other hand, by initiating a relicensing proceeding at this time, the company risks the premature loss of its ten megawatt facility and the loss of fifteen years worth of power generated by that facility. The result is that unless there is a change in current law, the forty megawatts of new capacity will not be built until the expiration of the existing license.

These problems can be easily addressed in either of two ways. The first is to increase the maximum license term under Section 6 of the Federal Power Act from fifty to seventy-five years. The company in our example could then seek an extension of their license by amendment. The resulting forty year term would be long enough to justify the $50 million commitment to the project. The second possible solution is to grant existing licensees a preference in the relicensing process.

We see several benefits which would flow from increasing the maximum license term and granting a preference in relicensing to existing licensees. The licensee who has operated a project for a number of years has demonstrated a commitment to hydropower and has valuable experience upon which to draw in the future operation of his facility. In addition, a relicensing preference would encourage optimum utilization of our hydropower resources with a minimal intrusion into existing property rights. Finally, if a licensee is ready, willing and able to operate a site at its maximum potential, we see no justification for granting a newcomer a new license with its attendant right to condemn the property and eject the existing licensee.

We would urge adoption of both the longer license term and the relicensing preference, because differing circumstances may make one or the other of these alternatives more desirable in particular cases. Obtaining a license can be costly and time-consuming. If extension of an existing license will result in a long enough term to justify the investment required to upgrade a project, relicensing may be undesirable. On the other hand, expansion of a project within but a few years of the end of the license term may be feasible only if the project can be relicensed. And, as I have noted, a relicensing preference is also desirable as a more equitable treatment of existing licensees.

Thank you for the opportunity to appear before the Subcommittees today. In closing, I would request that we be allowed the opportunity to supplement my testimony with additional written comments.

STATEMENT OF ROBERT L. McCARTY, ON BEHALF OF THE COLORADO RIVER WATER CONSERVATION DISTRICT

Mr. McCarty. Mr. Chairman, my name is Robert L. McCarty. I am an attorney with the firm of McCarty, Noone & Williams here in Washington. Their office is special counsel for the Colorado River Water Conservation District of Glenwood Springs, Colo.

Roland C. Fischer, secretary-engineer of that district, has a prepared statement, Mr. Chairman, but could not be here today and asked me to appear. I would like to have it inserted in the record and to briefly summarize it with your permission.

Senator Humphrey. Fine. Thank you.

Mr. McCarty. To identify the district, it was established by the State of Colorado as a public entity back in 1937 to preserve and conserve, safeguard the waters of the Colorado River system for use within Colorado. It covers a substantial area, almost some 15 counties on the west slope of Colorado. Its territory embraces a number of rivers very familiar in the past to this committee, including the headwaters of the Colorado River and substantial tributaries such as the Yampa, Gunnison, and the White River.

In the course of its statutory responsibilities within the State, the district has been an applicant to FERC for a number of permits and is currently an applicant for a major hydroelectric project license known as the Juniper-Cross Mountain project which is situated on the Yampa River.

The opportunity of, possibility of developing hydroelectric power at one of these substantial water conservation projects, and that is what they must be, particularly in the arid west, the conservation of water for consumptive uses, development of power at such facilities provides a real opportunity, of course, not only to provide a resource necessary in the form of hydroelectric energy, but also to provide financing to take care of the storage cost of water. At the same time, it requires a Federal license, and that process is becoming increasingly complex and expensive.

One of the reasons for the complexity has been the alleged collision at least between varying jurisdictions, and particularly federally, and the extent to which the bulk of the district's comments are addressed.

The first instance indicated relates to the Wild and Scenic Rivers Act, and citation is made to the most recent example of this. There was a rulemaking in the September 2 issue of the Federal Register by the Forest Service in which it indicated that any decision as to whether or not there would be an impact on a wild or scenic river, even though only a study river, had initially to be made by that entity, despite the fact that the Wild and Scenic Rivers Act itself contains an express exemption to licensing for reaches above and below a particular wild or scenic segment.

This collision creates the difficulty, of course, for any applicant as soon as he realizes that there are these contesting jurisdictions. He begins to wonder when he is going to get an answer.

Another example is a statute very familiar to this committee is the Federal Land Policy and Management Act of 1976, sometimes known as FLPMA. One of the most notorious examples of collision under this statute that I have seen involved a preliminary permit given to a city in Colorado which had been opposed by the Interior

Department, simply by comments, not as a formal intervener, but opposed on the basis that a portion of the area would involve a study area for a wild and scenic river. The Commission nevertheless went ahead and issued its permit because there wouldn't have been any construction authorized under the permit anyway, so the project could be studied, and the then Secretary of the Interior promptly issued a letter to the permittee stating that if the permittee went on some of the land involved, most of which were public lands, he would be considered in trespass.

This places the permittee just in a totally impossible position because he has from one entity a permit requiring him to do certain things, and yet he has got a letter from the Secretary of the proprietor of some of the land involved telling him that the sheriff will be after him if he moves.

There is certainly no reason for that sort of conflict or harassment.

FLPMA as well, as we read it at least, made it clear that it was not meant to supersede the various responsibilities of the Federal agencies, and it is specific on this, which are authorized to develop or participate in the development of water resources or to exercise licensing or regulatory functions in relation thereto. That certainly embraces FERC.

It also is very specific with regard to the preservation of existing rights and with reservations and withdrawals and that sort of thing that have already been established for the statute. Despite this, the district itself, although it applied in 1975 even before FLPMA was enacted, and thus the land that it was seeking to study for the Juniper project were covered under a reservation, nevertheless faced opposition from the Interior Department with respect to some of its claimed responsibilities under FLPMA very promptly afterward.

One of them was somewhat belated. It wasn't until 1980 that under the wilderness review provisions of FLPMA the BLM found in going through an inventory of proposed wilderness areas that one of the dam sites involved in the Juniper-Cross Mountain lay within what they proposed to be a wilderness area so that the district is now faced with a problem before Interior while they have an application pending before, for a license before FERC, as to whether one of their dam sites may not be designated as a wilderness. It has already been established as a wilderness area. The matter is on appeal now to the Interior Department, but it is not known, of course, where it will come out, but I think it is clear just from the city of Delta as well as from this Juniper-Cross Mountain instance that there is confusion and doubt in the permitting and the licensing process as a consequence of colliding jurisdictions within the Federal Government itself which shouldn't be permitted.

Reference has been made by others to the Clean Water Act. I am not sure that the 404 permitting by the Corps of Engineers has been mentioned, but there has been a specific instance of the Corps refusing even after the entire licensing process has been completed, the exhaustive process that goes on before FERC, in which the Corps refused to give a 404 permit so that you have one agency commanding the entity to go ahead with the construction of the project and the Corps itself rejecting it.

The Endangered Species Act provides problems. I know that Congress has faced this. It came up with a rather elaborate review committee. The committee, I think the history of it has shown it to be unworkable, and we think that there must be some other way to provide some early decision for entities which run into an alleged endangered species problem, and we think that the forum for that could be an adjudicatory body such as FERC without the applicant and the project itself being remitted to the flat mandate if the Fish and Wildlife Service finds an impact on an endangered species that the project has simply to be discarded even though there has been thousands and sometimes millions of dollars spent in trying to implement it.

I think the time element involved with the fact that the Juniper project at least has been under application for permit and not a license, it has been in this process since 1975 recalls again what we think is the necessity in view of these colliding jurisdictions for something that some previous witness referred to as a one-stop shot, and we think that that which was the situation with FERC's predecessor, FPC, up until a decade or 12 years ago, would be a desirable thing for FERC to return to, and in those circumstances, at least for hydro, we don't think it is necessary to establish an entirely new agency such as an energy mobilization board at least for hydroelectric power, but if these collisions among the jurisdictions are considered, are to continue, then it might very well be a route that would have to be taken.

I think others have mentioned, and I would just like to repeat the thought that FERC is an adjudicatory body. They do provide for an opportunity for all persons to make their views known often in formal proceedings, and then there is a provision for staff to appeal the decision. There is provision for judicial review, and we think that all of those provide sufficient checks and balances to arrive at a fair and just result in the public interest, and we think that within that machinery the Commission itself with this committee's help and encouragement can take action to speed up its processes and to shuck off unnecessary requirements to get hydro back on the fast track that is needed.

We appreciate the opportunity, Mr. Chairman, to appear, and we would be glad to respond to questions.

Senator HUMPHREY. Thank you, Mr. McCarty. Before we go to questions, I would announce for the record that Mr. Russell Smith who is secretary-manager of the South Columbia Irrigation District has submitted written testimony which will be made part of the record.

[The prepared statements of Mr. Fischer and Mr. Smith follow:]

BEFORE THE
SUBCOMMITTEE ON WATER AND POWER,
HONORABLE FRANK MURKOWSKI, CHAIRMAN
AND THE
SUBCOMMITTEE ON ENERGY REGULATION,
HONORABLE GORDON HUMPHREY, CHAIRMAN
OF THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES, UNITED STATES SENATE
HOLDING HEARINGS ON HYDROELECTRIC POWER DEVELOPMENT.
OCTOBER 19, 1981

STATEMENT OF ROLAND C. FISCHER, SECRETARY-ENGINEER, COLORADO RIVER WATER CONSERVATION DISTRICT, GLENWOOD SPRINGS, COLORADO.

The Colorado River Water Conservation District appreciates this opportunity to express its views on hydroelectric power development and methods by which the development of this clean, renewable resource can be enhanced and encouraged.

By way of identification, the River District is a public agency created in 1937 by an Act of the State Legislature of the State of Colorado to conserve and protect for Colorado the waters of the Colorado River System to which the state is entitled under the Colorado River Compact. The District includes all of twelve and parts of three more counties within the state on the western slope of the continental divide. The headwaters of the mainstem and principal tributaries of the Colorado, Yampa, White and Gunnison Rivers originate within the geographic area of the District. The District holds numerous conditional decrees for the use of water within the state for domestic, municipal, industrial and hydroelectric purposes. The District has held preliminary permits for hydroelectric projects issued by the Federal Energy Regulatory Commission (FERC), and is currently an applicant before FERC for several additional permits, as well as being a license applicant for a major water conservation and hydroelectric project known as the Juniper-Cross Mountain Project, FERC Project No. 2757.

Hydroelectric power is not only a clean, renewable resource but can also be important in the financing of projects for the conservation of water for beneficial consumptive uses, a major concern in the arid states of West. At the same time, however, the inclusion of hydroelectric power in a water conservation facility means that Federal licensing is necessary. This procedure has become increasingly complex and expensive. There now appear to be a number of competing claims to jurisdiction over licenses, where previously only FERC had jurisdiction, and FERC itself seems to want more and more from an applicant in the way of costly studies, tests and work programs without of course any assurance that a license will issue. Some sort of action appears indicated in order to speed up the licensing process and reduce the costs involved.

The Committee is undoubtedly aware that at least some of the difficulties in the licensing process have arisen from claims in the past by some agencies that clearance and approval must be had by them before it is possible for FERC to approve a license. These claims usually arise out of statutory programs under which the competing agency claims that it must pass on whether the particular program involved would be impaired by a licensing, rather than decided by FERC itself, as the licensing entity. For example, both the Departments of the Interior and Agriculture have claimed that FERC may not license any project above or below a designated segment of a wild and scenic river, even if the designation is only for study purposes, until the respective Secretary has made a determination as to whether there would be any effect. The most recent example of this claim is in a proposed rulemaking by the Forest Service which appeared in the Federal Register of September 2, 1981 (46 Fed. Reg. 44007). Under this proposal, as we understand it, no license or permit could be issued without the consent of the Secretary of Agriculture, with such consent to be given only upon a Secretarial determination that the designated wild and scenic river or study river would not be directly and adversely affected by a water resources project proposal. Yet the Wild and Scenic Rivers Act itself, immediately after the sentence which bars FERC from licensing a project "on or directly affecting" a designated river (and further that no agency shall license a project that would have a direct and adverse effect on the values for which the river was established, as determined by the Secretary), states:

> Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of approval of this Act.

We think it clear from the legislative history that Congress intended that FERC should continue to make the judgment, in the licensing process, and did not intend to subject FERC to the competing jurisdiction of either the Secretary of Interior or Agriculture. There is nothing in the Act to indicate that a veto power was being given the Secretaries for projects above or below a designated reach. This power nevertheless continues to be asserted and obviously creates problems for local entities which result when two Federal agencies collide.

Another example lies in the Federal Land Policy and Mangement Act of 1976, sometimes called FLPMA. The Interior Department's views of BLM authority under this statute, at least during the last Administration, created a variety of conflicts with the permitting and licensing process at FERC. One of the most notorious, in our view, involved the City of Delta, Colorado, which got a preliminary permit from FERC to study a project on the Gunnison River. Interior had advised against the granting of the permit because it would have involved a section of the river that had been designated for study under the Wild and Scenic Rivers Act. FERC nevertheless granted the study permit, which permit of course does not authorize any construction, as contrasted to a license. Thereafter, when Delta attempted to do the study work required of it under its permit from FERC, then Interior Secretary Andrus personally wrote the City informing it not to go on any of the Federal lands involved under pain of being held in trespass. This was an impossible position for a permittee to be put in.

FLPMA itself was intended to preserve valid, existing rights and was also not meant to supersede any statute not specifically set forth as superseded in the text of the statute. The Federal Power Act was not among the statutes specified as superseded and indeed FLPMA itself contains an additional warning that it was not to be construed (Section 701(g)):

> (4) as superseding, modifying, or repealing, except as specifically set forth in this Act, existing laws applicable to the various Federal agencies which are authorized to develop or participate in the development of water resources or to exercise licensing or regulatory functions in relation thereto;

This clearly embraces FERC.

In addition, Section 701 of FLPMA provides in Subsection (c):

> (c) all withdrawals, reservations, classifications, and designations in effect as of the date of approval of this Act shall remain in full force and effect until modified under the provisions of this Act or other applicable law.

This provision is of signal importance, in the River District's view, in connection with its Juniper-Cross Mountain Project. As the Committee may know, when application is made for a preliminary permit or a license to FERC, under Section 24 of that Act the lands involved are automatically withdrawn from entry for other than hydroelectric power purposes until otherwise ordered by FERC. Thus, in 1975 when the River District made its application for a preliminary permit for the Juniper-Cross Mountain Project, the two dam and reservoir sites were withdrawn from entry under the Federal Power Act. Indeed the lands had already been subject to power withdrawals made by the Federal Government dating back to 1909. Nevertheless, in 1980, under the wilderness review provisions of Section 603 of FLPMA, BLM designated the Cross Mountain area as a wilderness study area, to include the Cross Mountain Canyon and the very damsite that was already withdrawn for power purposes well before FLPMA was even enacted. This action is now on appeal within the Interior Department. We of course do not know how the matter will come out but we think that prospective licensees should be spared from this sort of harrassment. Again, FERC made its views well known to the Interior Department, when rules were being promulgated by BLM for the implementation of FLPMA, to indicate that FLPMA was not intended to override the Federal Power Act, yet FERC was totally ignored. The result, as may be seen from only the City of Delta and the Cross Mountain instances, is that confusion and doubt has been tossed into the permitting and licensing process with the prospective permittee and licensee in both instances being subjected to delay and additional expense as a consequence of haggling among agencies as to which has the authority over what.

The Clean Water Act, from amendments made in 1972 and since that time, has also had its impact on the hydroelectric licensing process. Among them is the contention by the Corps of Engineers that an FERC licensed project, after full, lengthy and exhaustive processing by FERC, including a complete environmental impact statement, nevertheless requires a Section 404 permit before actual construction can take place. This has to be one of the most duplicative requirements that could ever be urged. In addition there is the controversy urged by environmental groups under the Act that hydroelectric projects must also have an EPA permit under the NPDES system. This contention is currently in litigation, which, if successful, will engraft yet another duplicative permitting process on projects already scrutinized by FERC for water quality concerns.

There is also the express provision of the 1972 Act that a water quality certificate must be received from the state, as long as the state acts within a year of application. If the state denies such a permit the project may not be licensed at all. Again this is a judgment area in which FERC's review process should be given recognition, without permitting a conflicting state provision to kill a project.

The Endangered Species Act, of course, is a major problem area for many prospective permit and license applicants. The uncompromising nature of this statute and the single minded administration that it has had thus far has yet to be fully appreciated in the licensing process. There are several alleged endangered species involved in connection with the Juniper-Cross Mountain Project and in particular two native fishes known as the Colorado River squawfish and the humpback chub. Both species, only little more than a short decade ago were considered to be trash fish and efforts were being made by State and Federal agencies to eliminate them. Now their status as endangered is expected to be pushed by the Fish and Wildlife Service as a reason why the Juniper-Cross Mountain Project cannot be constructed. There is of course the consultation process provided for under the Endangered Species Act which we assume will one day be reached by FERC, not the River District. The reason is that under the FWS interpretation of the Act, only Federal agencies can consult with it and not an applicant like the District. The District has been trying to consult with FWS since these fish species were cited as a likely bar at the time the District was granted a preliminary permit. Instead, however, it was indicated that only Federal agencies could consult and that the consultation process could not begin until we actually had a proposal for construction, upon which FERC would then consult with FWS. That process should get under way before too much longer but previous events in this area leave some doubt as to what relief may be found in it. The Supreme Court made it plain in the Tellico Dam Case, TVA v. Hill, that Congress, whether it intended to or not, had given endangered species priority over every other program of Government. The special review committee which Congress then established has to our knowledge only handled two matters since that time. One of them, the Grayrocks Dam involving the whooping crane, was approved by the Committee after the entities desiring that project established a $7,500,000 fund to benefit the whoopers. The committee disapproved the other project, Tellico Dam involving the snail darter, whereupon Congress, which had spent over $100,000,000 on construction of over 90% of the project, promptly overrode the committee it had established. There must be some other way to provide some early decision for entities which run into an alleged endangered species problem to have that problem fairly considered by an adjudicatory body such as FERC, but without being remitted to the flat mandate that if FWS finds an impact on endangered species, after the project is well down the road and after years of expensive studies of every type -- engineering, economic and environmental -- that the project must nevertheless be simply discarded.

The Juniper-Cross Mountain Project on the Yampa River in Western Colorado will provide some 148,000 kilowatts of installed capacity and an average annual production of almost 350,000,000 kilowatt hours, equating to in excess of 600,000 barrels of oil per annum, and of course its output will be largely peaking power, making it even more valuable. In addition it will provide in excess of a million acre-feet of storage for ultimate beneficial consumptive use. The recreational facilities planned for the first phase would accommodate some 150,000 recreation days per year. The entire undertaking is of great importance to the entire inter-mountain area and particularly to the immediate region in Northwestern Colorado which is undergoing such expansion at this time in connection with oil shale, coal and other energy undertakings. The River District applied for its permit from FERC in 1975 and after numerous studies, made application to FERC for a license, together with the Colorado-Ute Electric Association, which will purchase the power for use by municipal and co-op systems throughout Colorado. Both public entities have expended substantial sums in the furtherance of their application. FERC has projected that if a hearing is held it will be early 1985 before any decision is reached by that agency although FERC has also stated that if no hearing is held they should reach a decision by the end of 1982. The applicants of course hope that some decision next year will be possible but this possibility would certainly be enhanced should the Congress take some action to eliminate the bewildering claimed conflict of jurisdictions and thus return FERC to the more positive role which was enjoyed by what was then known as the Federal Power Commission. A little more than a decade ago the Commission was clearly a "one-stop shop" with there being no doubt as to its authority to decide finally any application before it. An applicant at that time had some assurance that the Commission would make the final decision, subject to judicial review, and not several other Federal agencies having some particular program or interest to further. The Supreme Court had assured this in cases like First Iowa Hydroelectric Co-op vs. FPC in 1946, in which the Federal Power Act was proclaimed as one of the great conservation statutes of all time and further that Congress, in occupying the field, had left no room for conflicting state controls. Since that time, however, such conflicts have been allowed to reemerge and they now appear as a threat to the entire program from both the Federal and State entities.

It is not believed necessary for Congress to establish a new entity such as an Energy Mobilization Board when at least as far as hydroelectric power is concerned it already has an established entity like FERC. What would be desirable, however, would be to make it clear that notwithstanding any other provision of law, FERC jurisdiction to act with finality, subject to judicial review, on any application before it should not be impaired or modified in any respect whatsoever. The Committee is urged to consider such action at an early time toward the end that the substantial confusion and doubt which exists in this area can be effectively eliminated.

It should be borne in mind that FERC is an independent adjudicatory agency where all entities having a substantial interest are given an opportunity to make their views known, often in public proceedings, prior to a decision by the Commission staff. The staff's decision is appealable to the Commission itself and that result in is turn subject to rehearing before the Commission. In some matters there is a formal hearing process, initial decision by an Administrative Law Judge and then action by the Commission itself on that opinion, in addition to rehearing it requested. In all instances an aggrieved party can appeal the result to a U.S. Court of Appeals. With such a panoply of checks and balances already established under the Federal Power Act there is ample opportunity for a fair and just result. We suggest that within that machinery the Commission itself, with this Committee's help and encouragement, can take action to speed up its processes, to shuck off unnecessary requirements, and to get hydro back on the fast track that is needed.

The River District greatly appreciates the opportunity to appear and wishes to thank the Committee for its attention and consideration.

"The Green Spot of the Columbia Basin"

South Columbia Basin Irrigation District

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TESTIMONY

TO

SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

SUB-COMMITTEE ON WATER AND POWER

SUB-COMMITTEE ON ENERGY REGULATION

October 19, 1981 Hearing Washington, D. C.

Senator Frank Murkowski, Chairman

This testimony is presented on behalf of the three Columbia Basin Project irrigation districts, being the East Columbia Basin Irrigation District, the Quincy-Columbia Basin Irrigation District and the South Columbia Basin Irrigation District.

John Baird, Secretary-Attorney for the Quincy Columbia Basin, is also presenting testimony on behalf of the three districts. Hopefully, John's testimony will address the legal and contractual aspects of the licensing procedures for hydroelectric development on irrigation facilities of federally constructed reclamation projects. I will address the formation, construction, operation and maintenance aspects of the licensing procedures and requirements.

We are not here to ask for financial assistance; we are asking that you do whatever you can to restrict or minimize the Department of Interior's efforts to have the Federal Energy Regulatory Commission require an additional annual payment for the use of irrigation facilities serving irrigation districts having repayment contracts with the U. S. Bureau of Reclamation where an irrigation district is attempting to develop the marginally feasible hydroelectric potential that exists on irrigation systems.

We oppose the application of the federal site use charges in general for feasibility reasons and oppose it specifically on the Columbia Basin Project as a breach of Article 55(b) of our 1968 Amendatory Repayment Contracts.

Development of an irrigation project to serve the Columbia Basin area of South Central Washington appeared feasible before the turn of the century. Several sources of water were considered and studied during the early part of this century. The construction of the project was initiated in 1933 with the start of Grand Coulee Dam as a Works Progress Administration endeavor. Formal authorization by Congress occurred in 1935. The Project was then planned as a social endeavor to remove people from the financially depressed metropolitan areas to a small irrigated farm of 40 to 70 acres where a family would be completely self-sufficient. World War II and the need for large quantities of low cost electrical energy to operate the West Coast shipyards jelled the size of dam to be built at Grand Coulee and postponed development of the irrigation features of the Project.

As the war approached its end, planning for the Project development changed from the original social experiment to providing a home on a farm of 80 to 100 acres for many of the veterans who served their country during the war.

The three irrigation districts were formed under State Law in 1939 and 1940, and construction of the irrigation delivery system began as World War II was closing down in 1945. The construction to serve the present 600,000 acres was performed primarily during the 1950s with service provided to 422,000 acres by 1959 and for 519,000 acres by 1969. Because of the true contour construction of the lateral distribution system, the small size of the Farm Units and the soil, the South Columbia Basin Irrigation District would have been a complete failure if it were not for the development of the sprinkler systems for application of the water to the land. Since the mid-1960s the design and layout of the Farm Units and the delivery system have conformed to the legal subdivisions wherever practical for an open system.

The two large landowners on the Project, namely the United States and the land grant railroads, would sell their lands when water was provided at U. S.-appraised prices to eligible purchasers with privilege to purchase determined by lottery.

Our original contract with the United States was executed on October 9, 1945. That contract provided that the United States would construct, operate and maintain the Project in perpetuity with the irrigation districts acting as the contracting entity whose functions were limited to collecting assessments from the landowners to pay the construction obligation and the annual operation and maintenance costs to the United States. The contracts with the United States were amended seven times through 1965 with the most significant amendment increasing the repayment obligation from an average of $85.00 per acre to $131.60 per acre and removing the ceilings on construction costs and drainage costs.

All of the above sound more like an effort of the "Great Society" rather than a subsidy to the landowners.

After several years of negotiating, On December 18, 1968 an eighth Amendatory contract was signed by each of the three districts with the United States. The most significant change was the provision for the transfer of the operation and maintenance of some of the irrigation facilities from the U. S. to the districts. The most significant change, as far as this hearing is concerned, was the inclusion of Article 55(b) which provides as follows:

> 55(b). With the prior approval of the Secretary, the District either alone or in conjunction with the other districts, may build plants for the production of power and energy and structures and facilities necessary for the operation of such plants and all such plants shall be and remain in the exclusive control, possession, and ownership of the District or districts. All revenue from such power plants and from the use, sale, or the disposal of power energy therefrom shall be and remain the property of the District or districts.

We consider that the efforts now by the Department of Interior to impose a use charge are in violation of that 1968 Amendatory Contract. We ask you to lend your support to protect the integrity of the United States.

During the construction of the Project in the '50s and '60s, water and land were considered the lowest cost items of the construction; so, they were the last to receive attention. Canal lining and quality of the water prism were given little attention until after sufficient water was in the ditch to determine the extent of losses. At the time of transfer, a list of several pages was made of items that the U. S. agreed to improve as a part of the construction costs of the Project. For every page of items listed, we could prepare a list of ten pages of items that needed correction and improvement. We have spent considerable of our O&M Funds on lining, piping and structure improvement.

The districts are nonprofit quasi-municipal corporations; therefore, revenues from the power production would be used for one or more of the following four purposes: (1) Improvement and betterment of the irrigation system, (2) Reduction of assessments to the landowners, (3) Rehabilitation of inadequate systems, and (4) New irrigation development.

In addition to asking your assistance to minimize or eliminate the Department of Interior's efforts to levy a use charge on hydroelectric development on Reclamation irrigation facilities, we ask your help in eliminating the promiscuous filing by persons and companies who are not involved in either the repayment or operation and maintenance of irrigation projects constructed by the U. S. Bureau of Reclamation. We have experienced several filings for preliminary permits on Project facilities from people who were so unfamiliar with the Project that they were not aware that the facility had been either abandoned or its operations changed so that it would not be a viable site. Those filings are made using information published several years ago by the Bureau of Reclamation and the Corps of Engineers.

Any efforts your committee can devote to improvement of the climate for irrigation districts under contract with the U. S. Bureau of Reclamation to develop the sorely needed electric energy potential existing on their Projects will be greatly appreciated.

I thank you for the opportunity to provide input to this hearing.

Respectfully yours,

On behalf of the

East Columbia Basin Irrigation District,
Quincy-Columbia Basin Irrigation District and
South Columbia Basin Irrigation District

Russell D. Smith

Russell D. Smith
Secretary-Manager
South Columbia Basin Irrigation District

RDS:ma

Senator **Humphrey**. Let's employ the method we used earlier. I want to get to several basic questions and ask each of you for an answer. I would ask that you keep your reply as short as possible. If you want to get to the very essence of what you have on your mind, I understand and appreciate you have already testified to that effect, but if you would like to summarize it on several points. I understand that the irrigation people would just like to be exempted from the whole licensing procedure altogether.

The first question is in what ways can the licensing process be speeded up while giving due consideration to matters such as environmental consideration and property rights? Let's start off on the left.

Mr. **Brown**. Well, Senator, as we mentioned before, you really have to establish that FERC is the true lead agency. It seems to me, as Mr. McCarty has said, you can't let the Corps of Engineers go off and issue a 404 permit. In the context of a license, a 404 permit is a dredgeable fill permit. If the corps is concerned, it probably should be with dredgeable fill-in of water. It should provide its comments to FERC for purposes of FERC considering those and taking those into account.

Similarly on land use, right-of-way access or BLM management of land or whatever it happens to be, they should be given a comment, but FERC is the ultimate decider of that question, and that is what we mean by true lead agency.

Dr. **Marker**. I would suggest that the 15-megawatt exemption be considered and it be tied to an ownership interest which I think would address many of the issues that have been alluded to in the hearings.

Second, I think a filing fee is appropriate to eliminate the speculative as opposed to the serious contenders.

Third, I think a provision for due diligence can be proposed for the licensee for the job to be awarded. Thank you.

Mr. **Rosholt**. Mr. Chairman, keeping in mind that adjournment has to be your primary motive, I would agree with that statement.

Mr. **Baird**. I reiterate the statements of these gentlemen plus the other witnesses in that respect.

Mr. **Campbell**. Mr. Chairman, I do not want to give the misimpression that the irrigation districts ask to be exempted from the license process. In fact, the irrigation districts feel, as the former speakers have said, that FERC ought to be the lead agency, and there should be fewer exemptions and more license requirements.

As well, I note that I failed to ask that my written statement be submitted for the record.

Senator **Humphrey**. They all will. I didn't mean to misrepresent your testimony. Mr. Boronkay?

Mr. **Boronkay**. I don't really have a comment on that. I would just like to clarify as an agency involved with municipal and industrial supply and some agriculture, we feel a flat out exemption without regard to any number is appropriate but only where if there is no Federal land, Federal dam, Federal water power involved.

Mr. **Richardson**. Let me say again, Mr. Chairman, generally we agree with the comments that have preceded this, although as I did note in my testimony, we do have some problem with expanding the hydroelectric exemption program, particularly of its impact on preference.

Mr. FERGUSON. As I said previously, increasing the use of exemptions according to some significance to property ownership and the licensing process and the changes that I recommended in the relicensing process which, of course, is part of the licensing process, would all speed it up.

Mr. MCCARTY. Mr. Chairman, I agree also on the stronger lead concept. If the authority is there, then I think the agency itself would be able to devise some means for expediting the process after giving everybody an opportunity to comment.

I, too, would like to indicate a reservation with regard to exceeding the present 5-megawatt exemption again because of the impact on the preference. I think the preference should be preserved.

Senator HUMPHREY. Yes. Well, the notion of restoring one-stop authority to FERC is popular. Is there any member of this panel who finds reason to object to that approach?

[No response.]

Senator HUMPHREY. Would any member of the panel object to leaving the decision as to who gets the development site with the owner of the site?

Mr. BAIRD. Mr. Chairman, I think when you are talking about owners, I think you have to take a look at the owner of the land as well as the owner of the water resource and the obligation for the operation and maintenance and the supplying of that water.

Mr. ROSHOLT. Mr. Chairman, owner or equitable owner as the case may be, in the situation of irrigation facilities, they are equitable.

Mr. MCCARTY. Mr. Chairman, I would just like to comment that there are Supreme Court cases to the effect there can be no ownership in the waters of the navigable stream, and that even though the land, the riparian land, might be owned by a particular person, if there is a proposal to develop a hydroelectric facility, under the authority of the Congress which it conferred on the jurisdiction of the Commission, it should be established there regardless of who the proposer is for the development of that project. That has to remain I think with, the power over the navigable waters, with the Federal Government.

Mr. BAIRD. Mr. Chairman, may I make a very short reply to one comment that you made that you were sure that all irrigation districts were not in favor of a Federal site charge? I think that is correct. The basic project here is here, however, on a somewhat different basis which is in my written testimony, but not in my oral testimony here.

I think the committee should be advised we have a repayment project with the United States which provides for the development, construction of these lowhead hydros by the irrigation district, and that all revenues therefrom belong to the district—a written contractual provision.

The Interior and Bureau of Reclamation apparently are not in agreement and are still actively attempting to impose that charge. That is one of the major reasons we are here.

Senator **Humphrey**. Let me ask each of you to comment on a proposal to give States greater authority in licensing, perhaps full authority for facilities of 15 megawatts of less.

Mr. Brown?

Mr. **Brown**. In a perfect world, Senator, that would be it seems to us, the way the licensing should proceed, especially with respect to small sites.

However, our research in our work with some 20 State legislatures throughout the country has indicated that the States, with few exceptions, do not have in place a regulatory mechanism that can approach FERC's ability at the present time to deal with the problems of hydroelectric licensing, so we would recommend a return to the State of licensing authority only under very carefully devised conditions, and they would have to be spelled out very specifically, and FERC would be the agency that would have to do the delegation assuming those conditions were met.

Senator **Humphrey**. Have you addressed that in your statement?

Mr. **Brown**. Yes, we have.

Senator **Humphrey**. What kind of criteria might be required?

Mr. **Brown**. There would have to be a showing of hydroelectric expertise. They would have to know what their electric projects were about. There would have to be a showing that the State was willing to assign resources to that agency, and thirdly, there would have to be a showing that the licensing was expedited, expedited in the sense that the agency had either the lead agency status or one-stop status within the jurisdiction.

Other than that, you just are creating more problems than you are solving.

Senator **Humphrey**. Mr. Marker?

Dr. **Marker**. As a developer who is involved in several States, east and west, we do indeed live in an imperfect world and where you are looking at an industry and a process which is extraordinarily capital intensive, I think one of the issues that you have to address is what makes the financing ability easier.

I would submit that a State focused process would really very seriously undercut the financability as in contrast to essentially a FERC lead agency point if you will approach.

Senator **Humphrey**. That opinion would hold even in those States which FERC might certify as having the resources and the expertise to handle that?

Dr. **Marker**. Yes.

Mr. **Rosholt**. Mr. Chairman, the previous panel spoke to this in detail, and my impression was the States were asking for this authority at least to the level of whatever you consider an exemptable project.

Senator **Humphrey**. Mr. Baird?

Mr. **Baird**. Very briefly, Mr. Chairman, I believe that we have six or seven agencies within the State of Washington, all of which have the opportunity to take a shot at us. I would say that we have had more problems with State agencies than we have had with FERC.

As a matter of fact, FERC has been extremely helpful and competent in its dealings with us. If we go with more State authority, I think we still need an overriding agency such as FERC which would keep a State or an agency of it from vetoing lowhead hydro development.

Senator HUMPHREY. Mr. Campbell?

Mr. CAMPBELL. I agree with everything that Mr. Baird has said probably because we are involved in working on the same projects, but I would like also to add that the problem with competitive Federal agencies, that would not be laid to rest if the authority for certain size project licensing was delegated to the States.

I think FERC has provided an excellent clearinghouse for those problems, and should have its authority to continue to do so strengthened.

Senator HUMPHREY. Thank you. Mr. Boronkay?

Mr. BORONKAY. Yes. I would be wary of the transfer to the State. I am not sure you have the ability to control and effectuate a national policy by turning it over to the State, and I agree also with the cautions expressed regarding expertise and the questions.

You also would not be doing away with the burden but just transferring it to another agency. I don't think the applicant would be served.

Senator HUMPHREY. The idea, of course, is by transferring it to the State, it will speed up the process. That is the rationale anyway. Whether that would actually occur is another question.

Mr. RICHARDSON. I would agree also with Mr. Baird's and Campbell's comments, and one of the comments that I received from a number of people developing a site in the State of Washington was they had a tremendous amount of difficulty dealing with a number of various State agencies.

This is not to say, however, that there isn't some things that might be turned over to the States. I believe Mr. Brown suggested the turning over of environmental review where the State has an adequate State environmental impact statement which is essentially duplicated at the Federal level, and there is the possibility there that greater State authority could be exercised.

Senator HUMPHREY. Mr. Ferguson?

Mr. FERGUSON. I am inclined to think that we would like to see some of the changes that we have suggested made in the Federal program and keep that.

Senator HUMPHREY. Mr. McCarty?

Mr. MCCARTY. Mr. Chairman, we would concur with the previous statements that it should stay with the FERC.

Senator HUMPHREY. Gentlemen, I thank you for your patience and for your willingness to come in some cases from great distant parts and in other cases not so distant. The record will remain open for additional comments for 2 weeks following our second day of hearings.

The subcommittees are adjourned.

[Whereupon, at 1:05 p.m., the hearing was adjourned.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

AER
ALTERNATE ENERGY RESOURCES
203 HARPER BUILDING
1504 THIRD AVENUE
SEATTLE, WA 98101
(206) 447-9937

ENGINEERS

October 20, 1981

Senator Frank H. Murkowski
Subcommittee on Water and Power
3106 Dirksen Senate Office Building
Washington, D.C. 20510

Subject: Bill S. 1299

To whom it may concern:

We would like to make the following letter public record:

AER Engineers has as a client the owner of an existing water intake on a stream here in Washington. He, an individual, would like to develop the hydropower potential of the site.

As you probably know, one role of the F.E.R.C. is to determine who has the exclusive right to develop a hydropower site. In the past this has been determined by issuing a preliminary permit to one of the parties competing for the rights to the site. In most cases, preliminary permits are awarded to municipalities over non-municipalities. If two municipalities or two non-municipalities are competing for a site, the party that applied first is usually given priority by the F.E.R.C.

Recently, the F.E.R.C. has adopted a policy that allows the owners of existing dams or intakes to apply for an "exemption" to a preliminary permit. Only the owner of the site is eligible to apply for an "exemption". The F.E.R.C. usually gives an application for an exemption priority over an application for a preliminary permit filed even by a municipality.

However, the maximum size of project that can be filed for as an exemption is 5 megawatts and our client's site is approximately 10 megawatts. This means that a municipality can obtain the rights to the site by filing for the full 10 megawatts. Our client could probably negotiate for the water rights, etc., but the municipality would have the development rights.

There is a bill now being considered by the Senate Energy Committee that would, among other things, revise the maximum exemption limit to 15 megawatts which would protect rights of ownership of thousands of people across the country and eliminate red tape in developing our natural resources.

Thank you,

John R. Beebe, P.E.
Principal, Electrical Engineer

cb

Central Utah Water Conservancy District

P.O. BOX 427 OREM, UTAH 84057 TELEPHONE 225-0042

R. Roscoe Garrett, President
G. Marion Hinckley, Vice President
Lynn S. Ludlow, Secretary/Manager

October 28, 1981

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Senator Frank H. Murkowski, Chairman
Sub-Committee, Water and Power
Senate Energy and Natural Resource Committee
U.S. Senate
Washington, D.C. 20510

Dear Senator Murkowski:

Senator Garn has informed this District that the question of the propriety of the Federal Energy Regulatory Commission having authority over hydroelectric power facilities is currently being discussed in Congress. On October 9, and 23, the Energy and Natural Resource Committee of the Senate held oversight hearings on the issue of hydroelectric power development and licensing. Apparently there are pieces of legislation presently pending in Congress on this issue. Senator Garn has suggested that the Central Utah Water Conservancy District express its views in writing on these matters for the hearing record and as background for the Committee in its actions.

The Central Utah Water Conservancy District was established on March 2, 1964, and is the sponsor of the various units of the Central Utah Project, which are being constructed by the United States Bureau of Reclamation. The District represents 12 counties of the State of Utah which include approximately 70 percent of the State's population. It administers the sale and delivery of project water, will operate and maintain most of the project facilities, and has current contracts for repayment of the reimbursable costs of the Bonneville and Upalco Units of the Project. The District, in sponsoring the Central Utah Project, is firmly of the opinion that benefits should be made available fairly and equitably to the citizens of the District.

The District contends that generation of hydroelectric power was authorized by the Congress as a part of the Central Utah Project and should be developed with all project beneficiaries in mind. During recent years, the value of electrical energy produced from hydroelectric power plants has greatly increased and the District has encouraged the construction of facilities that would utilize the hydroelectric capabilities of features of the Bonneville and Upalco Units. It believes that the benefits from these hydroelectric power facilities should be available to those citizens who have assumed the commitment and responsibility for overall project operation, maintenance and repayment. Actually it is this commitment which makes possible the hydroelectric power development.

On January 30, 1980, the Secretary of the Interior approved a policy to be followed in determining whether there should be federal or non-federal development of the existing hydroelectric power potential at Bureau of Reclamation project facilities. The Secretaries policy requires an analysis of proposed hydroelectric power projects on a case by case basis, but unless there are special circumstances that argue strongly for Federal development, all power plants with less than 5 megawatts of installed capacity would ordinarily be developed by non-Federal interests.

The Bureau of Reclamation has officially announced that a preference for so-called small hydroelectric power developments at existing or potential Bureau project facilities should be given to those entities that now are or will be operating such facilities for irrigation and municipal and industrial water supply purposes under contracts with the United States. However, inconsistently with this preference position, the Central Utah Water Conservancy District was advised by the Bureau to submit applications to the Federal Energy Regulatory Commission if interested in potential development by the District at specific Central Utah Project facility sites. The District, as advised, has applied to the Commission for a permit to prepare applications for licenses to construct small hydro projects at several Bonneville Unit sites. A number of competing interests have also filed applications with FERC on the same facilities and the competition against the District at the more financially attractive sites is extreme. The District has little confidence that any preference will be given by FERC to it as the project sponsor and operator under contract with the United States of the Project facilities that will be involved in the licensing process. It is our position that law and/or policy should provide this District, the sponsoring District, with the first right to develop these power facilities along with the other responsibilities that have been assumed by the District.

The Associate Solicitor for the Department of Interior, Division of Energy and Resources, in his memorandum of July 26, 1980, stated that where Congress has expressly authorized the development of hydroelectric power in connection with a project, non-federal development is not authorized. Where Congress has expressly authorized the Bureau of Reclamation to fully develop the hydroelectric power potential of a project such as the Central Utah Project, the FERC licensing authority is withdrawn and it may not license non-federal development at or on the project facilities. The commission apparently recognizes in its own rules that the Secretary of Interior has jurisdiction.

The Associate Solicitor has defined a "Small Hydroelectric Power Project" as any hydroelectric power project which is located at the site of any dam, which uses the water power potential of such dam and which has not more than 15,000 kilowatts of installed capacity. For the Bonneville Unit, this definition would include the power plant currently planned to be installed by the Bureau of

Reclamation at the Jordanelle Dam. If the Bureau does not develop the hydroelectric power facility, in the interest of the project, then it by law or policy should transfer that authority to the sponsoring agency (the Central Utah Water Conservancy District) in the interest of the water and power users and other beneficiaries within the project area.

Several opportunities exist for generation of hydroelectric power at Bonneville Unit facilities which would be of substantial benefit to the project, both water users and power users. The Secretary of Interior has authority under the Reclamation Project Act of 1939 to lease power priveleges to the Central Utah Water Conservancy District. This authority could provide for a hydroelectric power plant such as at Jordanelle Dam to be constructed by the Bureau and turned over to the district for operation and maintenance, or the District, with an agreement with the Bureau of Reclamation, could install and operate such power plants.

The Central Utah Water Conservancy District contends that the Bureau of Reclamation is not proceeding properly in the administration of small hydroelectric power development at facilities of the Central Utah Project. The District asserts that the Federal Energy Regulatory Commission has no jurisdiction to issue preliminary permits, licenses, or other regulations governing the development of small hydroelectric generation plants related to this project. Such authority and responsibiltiy properly rests with the Secretary of the Interior and should remain with the Secretary. It is important that action be taken immediately to clarify this relationship with the Federal Energy Regulatory Commission to avoid further confusion. The Commission should be directed to discontinue any and all considerations toward granting approval of applicants for the development of the hydroelectric power potential of the Central Utah Project.

The District encourages your Committee in its efforts to clarify the procedures and authorities for development of small hydroelectric power facilities associated with a project constructed by the United States and sponsored and operated under contract with the United States by a local entity. Thank you for the opportunity to provide your Committee with these comments.

Very truly yours,

Lynn S. Ludlow

Lynn S. Ludlow
General Manager

LSL:cg

cc: Governor, State of Utah
Utah's Congressional Delegation
Secretary of the Interior
Federal Energy Regulatory Commission

LONG LAKE ENERGY CORPORATION
330 MADISON AVENUE
NEW YORK, NEW YORK 10017
(212) 983-2006

TO: ENERGY REGULATIONS SUBCOMMITTEE
WATER AND POWER SUBCOMMITTEE
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

FROM: Paul J. Elston
President

RE: Oversight Hearings on
Hydro Power Development and
Licensings Proceedings.

SENATE ENERGY REGULATION AND WATER & POWER SUBCOMMITTEES

We would like to thank the Chairman for the opportunity to present the views of Long Lake Energy Corporation (Long Lake) at the Energy Regulatory and Water and Power Subcommittees' Oversight Hearings on Hydropower Development and Licensing Procedures. Long Lake is a new company working to develop a position in the electricity generation industry. Until recently it was impossible for a small company to survive in this industry which is dominated by large utilities who have been able to resist competition through control of the transmission and distribution systems. We perceived that recent public policy, legal, regulatory, and economic changes and changes in the attitudes of the utilities created an opportunity to develop profitably electricity generating capacity. We have focused our efforts exclusively on the development of small hydroelectric sites with existing dams because small hydroelectric power is the most environmentally benign and least controversial type of power generation and the Federal licensing process provides a clearly defined mechanism for entering the business. We have focused our initial efforts to secure development rights at hydroelectric sites in New York State.

Long Lake's business is based on the public policy to reduce to reduce the Nation's dependence on foreign oil and to encourage competition in the electric generation business as expressed by the Public Utilities Regulatory Policy Act (PURPA) of 1978. The Federal policy and laws are very consistent with the interests of New York State. Government officials and legislators in New York State have consistently indicated their interest in the development of hydroelectric power because of the state's heavy dependence on oil. While the rest of the Nation derived only 17% of its electricity from oil in 1980, oil fired generation in New York comprised 60% of the total installed capacity and provided 31% of the electric energy requirements for the state. Of the 63 million barrels of oil consumed, over 90% was imported.

The State's Energy Master Plan identifies the reduction of the State's dependence on oil as a major goal, and conservation as the cheapest and most economically beneficial way to achieve this goal. Increased use of renewable energy resources is identified as the next most attractive oil reduction strategy and is the only type of electricity generation which does not require the importation of fuel into the State. Beyond these strategies the State Energy Master Plan relies heavily on coal conversions and the construction of two additional coal plants and a pump storage facility to reduce oil dependence and to meet future increases in demand.

Long Lake decided to focus its hydroelectric development efforts in New York State because of the abundant potential for development and the obvious public interest which would be served by the development. New York State is the state with the largest amount of incremental hydroelectric capacity available at existing dams according to a study by the United States Corps of Engineers. The Corps study indicates that New York has as much as 2000 megawatts of incremental potential capacity. A separate study by New York State Energy Research and Development Authority indicates that the potential development capacity may be as large as 4000 megawatts.

In our one and half years of operation, we have filed for 32 preliminary permits and eight licenses, including two exemptions before the Federal Energy Regulatory Commission (FERC). The members of our firm have had extensive experience working in federal, state and local government. These experiences combined with our current work in developing small scale hydroelectric projects gives us a perspective about the FERC regulatory process that we hope will be valuable to this Committee.

The development of the small scale hydroelectric power potential in New York will contribute a significant amount to the State's energy supply. The decision about who shall be given the right to develop a specific site will effect how quickly and how well a project is developed and how much this renewable energy resource will contribute. FERC plays a critical role in this decision making process. We would like to address three points in our testimony about the FERC regulatory process.

First, in the fairly extensive dealings Long Lake has had with FERC in the past year and a half, we have been very impressed with the quality of the policies, the process and the staff. With the passage of PURPA and the Energy Tax Act of 1978, the demands on FERC and the role that they play in the development of hydroelectric power was changed dramatically. Before PURPA, FERC was faced with a small work load and with few competing applications for development rights. Since then their work load has increased and the competition for the development of sites has intensified. The introduction of competition for sites has placed FERC in a much stronger position to demand better information and better and more comprehensive developments. They have fully recognized the dramatic change required in their role and have responded in an outstanding fashion. The licensing procedures have been streamlined and the new procedures for granting exemptions have been effectively developed and implemented. FERC has been able to recognize situations which require new or expanded policies because of this new competitive element and have responded thoughtfully and quickly. For example, the attempt by some private developers to misuse the municipal preference through hybrid applications was effectively derailed by FERC's recent ruling.

The rulings on complex issues make it important for FERC to continue its regulatory role in the development of hydro power. We hope this Committee will work to insure that FERC receives adequate funding to maintain a strong regulatory role in the development of these valuable renewable energy resources.

Second, we would like to urge the Committee to recommend that FERC narrow their application of municipal preference even further. Congress made it clear in their work on the Federal Power Act (FPA) that municipalities should be given preference in the use of the water power that would benefit the community. The preference did not extend to municipalites that were developing water power for entrepreneurial and real estate speculation purposes rather that for municipal.

Obviously, as private developers, municipal preference works against us. However, our objections are not against the concept of municipal preference, but rather its improper application.

There are numerous instances where municipalities have misused the original intent of the law in order to leverage their position in the real estate market. Just as we object to private developers who tie up sites for speculative purposes without any real intent to develop the sites, the same objections can be made for some municipalities. This municipal speculation can occur even when the municipality is not the owner of the site. The net result is that it can preclude or delay development of a site as well as increase the costs of development.

We have two examples of this abuse of the FPA. The Village of Ilion, New York, filed for a site outside their municipal limits, in Dolgeville, New York which was partially owned by Dolgeville. Long Lake had already negotiated with Dolgeville to lease the dam and had filed for the site as a private developer. Ilion, filed for the site using municipal preference. Because we have property interest in the site we were able to file for an exemption which will supercede Ilion's application. Ilion's intervention will not affect the ultimate disposition of the development rights but has simply slowed the development. If this filing by Ilion for the site in another municipality had not occurred, Long Lake might have recieved a permit in August 1981. This competition is still pending before FERC.

A second example is the Essex County Industrial Development Agency in New York filing on the AuSable Forks Hydro site in Essex County. They acquired the site which was abandoned for $1.00. The agency has a stated policy not to develop the site themselves. In fact, their charter does not authorize them to engage in the production, distribution and sale of power or to directly finance the project. It appears that this municipal type agency has simply been using the municipal preference to tie up the site for future sale at the maximum profit.

These types of abuses of the FPA should be eliminated. They are in violation of the intent of the law and only serve to hinder development of sites though delays or cost increases.

Third, we urge the Committee to oppose any effort to increase the size limit for projects that qualify for exemption, as recommended by S. 1288. From our perspective as a private developer, increasing the number of sites subject to exemption will discourage development of many hydro projects.

In many instances, site owners are not serious about developing a site or are not in a financial position to do so. For a variety of reasons, the project they propose, may not take advantage of the full potential of the site. As long as the owner can file for an exemption, developers such as ourselves will not file to develop those sites because we know we cannot succeed in the competition before FERC. On the other hand, if we are in a position to compete for the sites through the licensing process, we will file if we think the project is economically viable. When we file, we force the current site owner to make the capital investment necessary to develop the site or to sell the rights to develop the site, for fair compensation, to developers interested in making that investment.

In addition to our opposition to expanding the exemption limit because of our interest in keeping the maximum number of projects open to competition for development rights, there is another important reason for not increasing the size of the exemption limit.

Sites over 5 megawatts require more careful oversight because of their size and potential impacts. A partial effect of the exemption is to shift much of the review responsibility from the federal government to the state governmen We believe the federal government should continue in the role of mediating the competing interests and jurisdictions particularly when many of the parties involved are federal agencies. The Corps of Engineers, EPA, and Fish and Wildlife are usually involved in projects larger than 5 megawatts. It is important that FERC review the details of these larger projects and decide the complex issues often involved in them.

We hope the members of this Committee will consider some of the points we have made. If you have any questions about our testimony, please feel free to contact us. Thank you for the opportunity to present our views.

New England Environmental Mediation Center
190 High Street Boston, Massachusetts 02110 (617) 451-3670

October 1, 1981

The Honorable Gordon Humphrey
The United States Senate
6205 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Humphrey:

The New England Environmental Mediation Center would like to comment, and if possible, to testify before the Subcommittee on Energy Regulation, in support of reform of the hydropower licensing process through increased use of environmental mediation.

The New England Environmental Mediation Center was founded to provide an alternative in New England to the frequent use of administrative and judicial proceedings to resolve environmental disputes. The Center seeks to increase the use and improve the quality of negotiation between parties to environmental conflicts, thereby reducing confrontation and delay. Funding for the Center's activities is provided largely by The Ford Foundation and the John A. Hartford Foundation. The Center assists in conflicts over activities such as hydropower generation, harbor dredging, industrial pollution control, facility siting, waste management, and highway construction. Similar non-profit organizations provide mediation and dispute resolution services in other parts of the country, including those areas having significant hydroelectric potential.

The Problem

The aspect of hydro licensing to which we invite your attention is the long, inefficient process used to resolve conflicts between hydro developers and those who advocate the management and use of waterways in a manner which competes with hydro development. We believe the process administered by the Federal Energy Regulatory Commission (FERC), commonly known as an "intervention proceeding", provides numerous opportunities for unconstructive delay through procedural maneuvering. Furthermore, we believe that, as presently arranged, it is an inadequate framework for negotiation and provides little help and few incentives for the parties to settle their differences.

Although FERC generally encourages negotiation, especially on disputes over rate setting, as a federal regulatory agency it lacks the staff capability, independence, and closeness to the conflict which are necessary to encourage fruitful negotiations on environmental and socio-economic conflicts. Based on our experience mediating hydro disputes, we believe that minor changes in the way that FERC allocates budget and staff could make the lengthy process of environmental conflict resolution shorter, more cost-effective, and more satisfactory to all parties. Such changes, because they involve the agency's budget, necessitate Congressional involvement. In conjunction with this Congressional action, we will soon propose to FERC that it make minor adjustments to its regulations which would incorporate a formal mediation step in the hydro licensing process.

Whether or not Congress exempts projects up to 15 MW from federal licensing requirements, environmental conflicts will arise and they must be managed at either the federal or state levels. We believe that negotiation between the concerned parties, with the assistance of a neutral mediator is a better way to resolve these conflicts than the adversarial administrative process the law requires for FERC proceedings.

Mediation

Mediation is a process in which an impartial person helps parties to a dispute negotiate an agreement which resolves their differences. Initially, the mediator reviews the conflict with each party individually to determine the issues in dispute. In these discussions the parties clarify ways they can protect their most important interests.

A series of meetings between the parties follows, during which they establish ground rules, share information, exchange proposals and negotiate. In most cases, the mediator then circulates a draft agreement. The parties amend the draft until an acceptable agreement has been reached.

Mediated agreements describe such things as construction schedules, engineering plans, protective measures, financing plans, monitoring procedures and reporting requirements. Often agreements establish a procedure which enables parties to resolve future differences. Once parties have signed an agreement, it is a contract, and they are bound to abide by its terms.

Mediation is a straightforward approach to solving complicated problems. It offers an alternative to the delay, expense, and complexities of litigation. Parties negotiate strategies which they could not design or accomplish working separately.

A mediated agreement is reliable and effective for a number of reasons. For one, parties monitor each other's performance. More importantly, by complying with its terms, they protect their interests. If necessary, parties can ask the courts to enforce a mediated agreement.

The Present Situation

FERC currently appears to favor any negotiated or mediated settlements that can be arranged outside of the formal process. FERC's staff routinely notifies our office of licensing disputes in New England and encourages the parties to attempt negotiation. However, FERC staff is limited by its regulatory responsibilities and commitment to fulfill numerous administrative requirements of the licensing process. These pressures combine with a lack of formal mediation training to restrict the staff's ability to improve the efficiency of the regulatory process through mediation.

We are aware that FERC's Administrative Law Judges can be designated "Settlement Judges" and thereby function as independent mediators. We have no doubt these judges are independent of the Commission, neutral with respect to the arguments made by the parties and skillful as mediators. However, their chief function is to settle complex utility rate cases. Also, they are at the highest levels of the Federal pay scale and they are all located in Washington. These factors would severely limit their availability to handle disputes between hydro developers and affected interest groups in timely, convenient and cost-efficient manner.

A Proposal

We propose that Congress, on the initiative of this subcommittee, take one or more of the following actions to expedite the licensing process for hydro facilities where conflict exists over environmental and socio-economic issues:

(1) Allocate funds in the FERC budget to permit FERC to retain independent mediators;

(2) Allocate funds in the appropriate budget to permit FERC's Chief Administrative Law Judge to retain independent mediators or otherwise make available mediation staff to him;

(3) Authorize and appropriate money for the Federal Mediation and Conciliation Service to provide its own mediators or to retain outside mediators for use by FERC;

(4) Authorize and appropriate funds for FERC to make available to state governments enabling them to retain mediation services for hydroelectric licensing disputes.

We would welcome the opportunity to discuss these matters with you, your staff, or other Subcommittee members and staff. In addition, we think that our testimony before the Subcommittee would help illuminate a practical and workable area of reform that has generally received inadequate consideration in the ongoing discussion of hydropower licensing. In our testimony we would discuss in detail the costs and inefficiencies of the existing procedures for resolving hydropower disputes, our experience and that of others in overcoming these obstacles through mediation, and describe how our proposals could be implemented simply and quickly.

The procedure for mediating settlements of rate cases using Administrative Law Judges appears to be working well and we feel the principles behind it can be extended to hydro licensing controversies. We believe the opportunities mediation presents to relieve the regulatory burdens on citizens and to reduce the regulatory workload of Federal agencies deserve consideration at the highest levels within FERC and the Congress.

Sincerely yours,

David O'Connor

David O'Connor
Chief Mediator

THE SENATE
STATE OF NEW YORK
ALBANY 12247

DALE M. VOLKER
58TH DISTRICT
CHAIRMAN
COMMITTEE ON ENERGY

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RECEIVED
OCT 23 PM 12

October 22, 1981

Senator Gordon J. Humphrey, Chairman
Energy Regulation Subcommittee
3202 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Senator Humphrey:

As Chairman of the Senate Energy Committee here in New York I wish to add my comments to the Hearing Record of Monday, October 19, in the matter of the future Hydro Electric Development and Licensing Procedure, particularly in the area of continued federal tax credits. Parenthetically, it is also important to note that these remarks, in contrast to an earlier statement by the Power Authority of the State of New York, reflect the opinions of elected officials charged with the overall responsibility of State energy policy.

For the record, I think it is important to emphasize that New York absolutely needs the continuation of federal Business Investment and Energy Tax Credits as they apply to small hydro development. Without this twenty-one percent inducement progress would surely slow and many of our marginal sites could not be seriously considered. With more than half of the State's potential sites being located within mountainous Adirondack Park lands, off limits to development, every accessible site is valuable.

Secondly, we have taken our own hydro development initiative through legislation which I sponsored; it has already caused significant activity in the State. The bill (Chapter 843, 1981) not only serves to waive environmental and other permit regulations in the interest of rapid development, but takes a giant step, ahead of any other state in the nation, by setting a purchase contract floor price. In short, any electricity generated at a new site commands a minimum price of six cents per kilowatt hour from the local utility, which must purchase the power, by law.

Through this rather bold step we have seen millions of private investment dollars being geared up for development in the Empire State. We would certainly hate to see the bloom lost to federal changes in this intricate, expensive capital financing arena.

Thirdly, I would like to quote verbatim from the State's own Energy Master Plan, II update. Highlighted in the summary for legislative review is a priority suggestion that we: "Amend the State Tax Law to provide an additional business tax credit for renewable resource investments."

(It is interesting to note that this policy document is theoretically binding on the Power Authority of the State, which offered testimony in opposition to continued tax incentives before your body earlier this week.)

Fourth, contained in the Office of Management and Budget publication, Additional Details on Budget Savings (April 1981), there is a cautionary note explaining that "no further Department of Energy spending is needed" in the small hydro area as goals are already being met through private investment. Later in the same section, OMB clearly states that, in its opinion, "sufficient incentives through investment tax credits are available."

Thus, as we can see, the Reagan administration has planned administrative budget reductions based on existing private sector investment. It would seem to me that any change in the tax code might well be met with a challenge from the President.

Finally, I offer various historical references from our own Governor Hugh Carey, PASNY Chairman John Dyson, cabinet members, as well as legislative leaders of both parties concerned with energy policy. All have repeatedly emphasized that New York's number one priority for continuing economic growth depends on the expedient diminution of our reliance on imported oil for the generation of electricity. I point out, in fact, that New York's utilities are the largest importers of oil for the generation of electricity in the nation; they import more oil than many of the world's largest industrial nations.

In summary, I would urge your committees to recommend that these tax credits be maintained, and if possible, be amended to relieve some of the regulatory lag which is embodied in licensing procedures. It is my understanding that the main deadline for tax credit qualification is set for 1985. Yet, the Federal Energy Regulatory Commission, which grants licenses under its own deadlines, may well force a developer outside of the tax deadline because of its own bureaucratic licensing delays.

We in New York cannot afford to lose one site, whether by regulatory lag or reduced federal tax incentives. Instead we must work in concert to spur energy independence.

I appreciate your admitting this letter to the record and hope that it provides a brief, well-rounded view of the position of the State of New York. I would be happy to respond in detail to any questions raised by this submission.

Sincerely yours,

Dale M. Volker

DMV:Hjg

TROUT UNLIMITED

ROBERT L. HERBST
Executive Director

October 26, 1981

Honorable Frank H. Murkowski
Chairman
Subcommittee on Water & Power
2104 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Senator Murkowski:

In view of our perspective on hydropower development as outlined in the attached fact sheet, we would request that the committee and the appropriate agencies address the following concerns:

1). Do the rules already on the books and the proposed legislation assure adequate protection for resident and anadromous fishes? Given that the proposed legislation S.1299 does not contain specific language to assure that the Fish and Wildlife Coordination Act, the Wild and Scenic Rivers Act, the Endangered Species Act, the Clean Water Act, and the Anadromous Fish Conservation Act will be enforced, we would like to see these assurances added to the wording of the bill.

2). How will Congress assure that professionals required to assess the potential effects of change on aquatic and riparian habitats due to hydropower development will be available during licensing of Federal, State and nonfederal projects, given cutbacks in personnel and funds in the Fish and Wildlife Service?

3). How does Congress intend to limit the definition of "existing dam structure"? Without a clear definition historic structures which may not have been functional for many years would be entitled to receive priority approval for preliminary permitting.

1959-1981 "Over twenty years of trout and salmon conservation"
Washington, D.C. Headquarters • 118 Park Street, S.E. • Vienna, Virginia 22180 • (703) 281-1100

4). Given the current printing restrictions in the Federal Energy Regulatory Commission, how does Congress intend to keep states and citizens informed on preliminary permits granted by the FERC?

5). Given the sizeable increase in the FERC licencing work load and the objectives of S. 1299, what provisions will be made by Congress and FERC to improve the commission's capabilities to monitor, licence or exempt projects and to assure compliance with licence conditions?

We realize that so far you have held only oversight hearings and you intend to investigate hydropower issues more thoroughly. Senator Murkowski, Trout Unlimited would be pleased to assist you in any way we are able. We look forward to working with you to protect our fisheries resources as the nation develops more energy sources.

Sincerely,

Robert L. Herbst
Executive Director

RLH/db
Enclosure

TROUT UNLIMITED
118 Park Street, S.E.
Vienna, Virginia 22180

Fact Sheet
Small Scale-Hydropower
October 31, 1981

Dear TU Leader:

Congress is currently considering legislation which will continue to diminish the free-flowing streams of this country. The proposed legislation will exempt small-scale hydropower projects, 15 megawatts (MW) or less, from the case-by-case licensing procedures currently required by the Federal Energy Regulatory Commission (FERC). This piece of legislation marks another step in the development of our nation's remaining free-flowing rivers and streams. To place the issue in perspective, we need to look at hydropower, its history, technology and legislation as well as the effects of this development on our fisheries resources.

HISTORY: Hydropower is not a new idea. The direct use of water to run gristmills, for instance, can be seen in many historic prints. As our technology has advanced, the use of hydropower became less cost effective than the use of coal, oil and more recently, nuclear-generated power. However, due to the increased cost of fuel and the 1978 Public Utility Regulatory Policies Act (PURPA), which requires utility companies to purchase hydrogenerated power at avoided cost, there is a resurgence of interest in hydropower. "Avoided cost" refers to the fact that utility companies must purchase inexpensive hydrogenerated power at the price they have "avoided" by not having to generate the power through much more expensive processes using coal, oil or nuclear fuels. Now FERC is receiving thousands of requests for permits to develop water-generated electricity which will be sold at inflated cost. Advances in the design of submersible turbines have also attracted many non-Federal developers who are seeking to: install hydropower plants at existing dams originally built for water supplies, recreation or irrigation purposes; repair old or decayed dams which are no longer in use; or receive authorization to dam free-flowing rivers and streams for power generation. Over 1500 requests for FERC preliminary permits have been received by that agency annually since the passage of PURPA.

TECHNOLOGY: Today's technology no longer resembles the graceful gristmills of old. Hydropower is the use of moving water to turn turbines to produce electrical power. Water will avoid resistance and would flow around turbine equipment if it were not controlled and channeled through the power generating mechanism. Dams are used to control the flow of water which is diverted through penstocks (enclosed canals) or headraces (open canals) where the force of the falling water is used for generation of electricity. Spent water is released downstream causing changes in water level, flow, temperature and water quality. Corridors for transmission lines carrying the water-generated electricity must be developed to tie into existing power lines. Roads for maintenance are also usually required.

Several modes of power generation are used at hydrogeneration sites. One requires the retention of water behind dams until utility companies require extra energy to meet peak electrical demands. Large quantities of water, often warmed by the sun, are then released from the reservoir. Between the time water is stored above the dam and released, there is often insufficient release of water passing the dam to meet minimal ecological needs in the river downstream from the dam. In areas where water inflow to storage areas is not great, released waters may be pumped back into storage during times of low power demand, further confounding the downstream ecology.

Another mode of generation is called run-of-the-river. While these facilities continuously release water past the dam, there are no promises that downstream flow requirements for ecological purposes will be maintained, especially in periods of drought when downstream reaches most desperately need the water. Even when water is released continuously, the changes in volume--such that fish migrating upstream mistake the tailrace for the mainstream, and the changes in water chemistry--such that nitrogen supersaturation is a problem in the tailrace, cause fisheries problems. Fry traveling downstream through successive dams along the Columbia River have incurred at least 95% mortality from physical maceration in turbines or from the impacts of gas bubble disease below the dams. Such problems are not unique to the Pacific Northwest.

High pump and storage projects awaiting permits in the Northwest will include all of these problems. While low-head hydroprojects (600 run-of-the-river potential sites are located in the Northeast) will not produce the severity of problems common to pump and storage hydropower facilities, nonetheless they will bring about other changes in stream ecology. Thus we find, even with low-head hydroelectricity development fishery resources and other multiple-use considerations, such as the inundation of lands, erosion, impacts on endangered species and wild and scenic rivers, have not been adequately addressed in the pending legislation.

LEGISLATION: In 1978 FERC began its process of modifying its case-by-case procedures for small-scale hydropower projects outlined in the Federal Power Act (16 U.S.C. 792). The passage of PURPA assured hydropower developers a fair market return on investment. The tremendous backlog of requests to FERC for preliminary permits for small-scale hydropower projects have reached such proportions since 1979 that FERC is seeking to ammend the Federal Power Act, thereby affording relief, through S.1299.

S.1299

A bill to reduce regulatory burdens and authorize the waiver of licensing requirements with respect to certain non-Federal hydroelectric power projects.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Federal Power Act (16 U.S.C. 792 et seq.) is amended by adding after section 30 a new section as follows: "SEC. 31. In order to simplify, promote, and expedite the development of a non-Federal hydroelectric power project, and consistent with the public interest and safety, the Commission, by rule or order, may waive any provision of this part, in connection with an application for, or amendment or notice of, a permit, license, or exemption for an existing or proposed water project and appurtenant project works, if the total installed capacity of the project upon completion is equal to or less than fifteen megawatts, subject to terms and conditions that the Commission considers appropriate".

Literally, the bill can be interpreted as giving FERC the authority to waive any environmental regulation, permit or license requirements, provided the project is for 15 MW or less and the developer is non-Federal. This would curtail public involvement.

While Trout Unlimited has been assured that existing federal regulations such as the Fish and Wildlife Coordination Act, the Endangered Species Act, and the Wild and Scenic Rivers Act would not be waived by FERC, the wording of the bill makes NO such assurances.

The Federal Power Act, as now worded, requires a developer to fund mitigation projects to safeguard migratory fishery resources lost due to development. The Congressional proponents of S.1299 are proposing a bill which would not hold developers responsible for funding mitigation if development involves an existing facility.

The term "existing facility" covers everything from in-place maintained facilities to decayed wooden facilities which long ago ceased their water impoundment function. The cost of mitigation, except for fish passage facilities, is a knotty question with serious implications and diverse points of view. Under current legislation, existing migratory runs will require mitigation by the developer at new sites.

However, any new attempts at salmonid restoration which would require fish passage at these small-scale hydropower facilities would not be the responsibility of the developer if the Federal Power Act is amended as proposed.

Several alternatives have been proposed to fund mitigation efforts:. one discusses a 50-50 cost-sharing plan for the developer and the Department of Interior. Another plan proposes user fees for those persons using water for irrigation, recreation or other fishery resources uses below a hydropower plant. Utilities use the rationale, for the user fee arrangement, that without demand below the facility, water-flow regimes could be ignored. On the other hand, those users mentioned so far might reason that the developers are users too and thus should pay an appropriate fee.

Despite problems with hydropower development, no one can deny this country's need for clean energy sources. If properly located, designed and constructed, hydroplants can take fishery resources into consideration, thereby having positive benefits. Hydropower does not produce acid precipitation, nor does it produce toxic chemical by-products or radioactive wastes. For this reason, TU members must realize the consequences of the FERC proposals and must be sensitive to the fishery issues involved in hydrodevelopment and examine the merits of each planned hydropower project.

EFFECTS ON FISHERIES RESOURCES: Development of hydropower facilities at operating dams, in general, will have little further effect on fishery resources. However, continued operation without regard to environmental matters may very well foreclose options for future water use, such as restoring or revitalizing fisheries. Special attention must be paid to new hydropower development and the improvement of sites with dams which may not have held water for many years. Construction of hydropower projects causes disruption of the aquatic ecosystem and may present turbidity problems downstream of the site. Once a dam is in place, the impoundment will inundate adjacent riparian habitat, increase the water depth and allow a large surface area of water to warm in the sun. The warming of deep water impoundments presents several fishery problems. The first is that waters may stratify, with warmer water near the top. Warm surface water will be productive for algae and certain insect life. However, nutrients fall to the dark, cool waters under the photozone and are not recycled to the top levels of the impoundments. This situation results in a warm, nutrientpoor environment for fish. Deeper water is plagued with sediment, making bottom substrates unsuitable for trout or salmon reproduction.

As mentioned, downstream habitats are also threatened by hydropower development. Warm water released from dams into penstocks or headraces may enter into natural streams miles below the dam depending on the design of the project. Fish which are contained in release waters are forced through the power-generating equipment. Those fortunate enough to arrive downstream alive are often so stressed by the experience that they are easy prey to birds and aquatic predators.

Probably the greatest threat from hydropower development is the water level change and flow regime imposed by the project's operation. Spawning areas can be dramatically altered as waters are released, or may be left to dry as water is withheld or repumped into storage.

A guarantee of specific stream releases from a hydroplant is particularly important during spawning and in times of drought. Realistically speaking, these may also be times of peak power production required by the heavy use of air conditioning in areas served by the utility company. The release of waters for power generation also causes erosion problems downstream which leads not only to the loss of precious topsoil, but to aquatic turbidity downstream. Sufficient turbidity will disrupt the breathing of fishes, forcing them to cleaner water. If no relief is found, fish may eventually suffocate.

None of the previous discussion begins to touch on the lost aesthetics inherent in a good trout stream or the potential of lost angler days along our trout and salmon rivers. As responsible citizens, we need to examine hydropower development and insure that impacts to water quality and the fishery resource are minimized. This can be done by examining the sites of preliminary permits for hydropower in your area.

Ways to find out which sites are being filed for:

1. Small Hydro Bulletin
   Michael J. McLatchy
   U.S. Dept. of Energy
   550 2nd Street
   Idaho Falls ID 83401
   Free (published irregularly)

2. Hydrowire
   PO Box 2321
   Boston MA 02107
   @$200 per year (24 issues)

3. FERC no longer sends free public notices: Office of Public Information can be called: (202) 357-8088

   Monitor (FERC newsletter)
   Superintendent of Documents
   Government Services Office
   Washington DC 20402
   @$21 per year (25 issues)

As always, your Governor, Senators, Congressional Representatives and your State fisheries and water resources agencies can be contacted.

Fellow members, please share this fact sheet with all anglers and local citizen's groups.

Sincerely,

Harry M. Miller

Harry M. Miller
President

NK:sk

EXAMPLE: Size of trout/salmon streams that could be affected by the bill is Montana's Madison River which has enougn water to operate a run-of-the-river 15 MW hydroplant producing 15 MW with a 100 foot head (dam). During low-flow months, a 10 MW firm yield is predicted.

public power council
500 W. Eighth Street · Suite 110
Vancouver, WA 98660
(206) 694-8593
(503) 241-3163

October 28, 1981

Honorable Frank H. Murkowski, Chairman
Senate Subcommittee on Water & Power
Room 3104
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Murkowski:

The Public Power Council respectfully submits the enclosed testimony for the Senate Subcommittees on Energy Regulation and Water & Power hearings on small hydroelectric generation. The PPC regrets that it was unable to participate in those hearings and appreciates being able to submit our testimony at this time.

We wish to thank the Subcommittee for the opportunity to comment on issues which are of particular interest to the Pacific Northwest. Should there be any questions regarding our testimony, we will be pleased to answer them.

Very truly yours,

Douglas R. Brawley
Staff Engineer

DRB:esn
Enclosure
cc: Alan Richardson
Morgan Dubrow
Edward Finklea

public power
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HEARINGS ON SMALL HYDROELECTRIC GENERATION
TESTIMONY OF THE PUBLIC POWER COUNCIL
SUBMITTED TO U.S. SENATE
SUBCOMMITTEE ON WATER AND POWER
AND
SUBCOMMITTEE ON ENERGY REGULATION

The Public Power Council is the power supply planning and coordinating organization for the Pacific Northwest's consumer-owned utilities which are Bonneville Power Administration's (BPA) preference customers. These 113 municipalities, PUDs and cooperatives receive all or some portion of their power from BPA.

The Public Power Council (PPC) was formed in 1966, in order to represent and advocate these preference customers' common interests when dealing with BPA, other regional and national organizations on power supply planning matters. PPC's activities include, but are not limited to, monitoring Bonneville's wholesale rate making, negotiations of new power supply contracts, development of programs to encourage small generating resources, and implementation of the Pacific Northwest Electric Power Planning and Conservation Act.

There are three subjects the PPC would like to discuss in this testimony: Federal Energy Regulatory Commission (FERC) hydroelectric project licensing, development of generation at federal hydroelectric projects, and federal agency policies which effect hydroelectric projects.

Current estimates indicate that in the Pacific Northwest there are more than 300 hydroelectric projects in some stage of the FERC licensing process. Approximately 31 of those projects are in the form of license applications. 34 more projects hold preliminary permits and are expected to submit license applications. The remaining 235 approximate the number of preliminary permit applications pending before FERC. These numbers indicate for just one region of the country the FERC will face a considerable and increasing work load to evaluate and license hydroelectric projects.

The majority of Pacific Northwest projects currently being filed with FERC are much smaller than our existing hydro projects. In fact, within the 300 estimated projects, the average project size is 20 MW. If small hydro power is to realize anywhere near the potential that has been ascribed to it, projects must be developed in a timely and expeditious manner. Small hydro can ill afford to fall into the pitfalls of time delay and regulatory morass that currently affect other generation sources.

FERC must adopt new procedures to quickly evaluate and decide upon the multitude of applications. The PPC supports efforts which will enhance and speed the regulatory process, aid project development and provide environmental protection. But as modifications to the licensing process are proposed, the Public Power Council feels that certain precepts must be maintained. The most basic is the preservation of licensing preference under the Federal Power Act. In the Pacific Northwest, many public utilities currently benefit from preference in hydro project licensing and will continue to do so in the future.

One of PPC's largest member groups, the electric cooperatives, do not benefit from preference to hydro project licensing. This is an omission that warrants correction. The Public Power Council believes that preference in licensing should extend to electric cooperatives and has passed the following resolution expressing their position:

> RESOLVED that the Public Power Council urge Congress to amend Federal Power Act to permit consumer-owned electric cooperatives and mutual associations to receive equal preference rights with states and municipalities in the licensing of hydroelectric projects.

The PPC suggests that these Subcommittees correct this omission by proposing an appropriate amendment to the Federal Power Act.

Another licensing matter which deeply concerns PPC is that of the entrepreneur capable of filing innumerable preliminary permits on hydro projects, but with little capability of pursuing expeditious project development. FERC should establish a permit process which clarifies the applicant's intent and ability to develop the project. FERC should also withdraw permits from applicants which do not respond to the permit requirements or show progress in project development. Such changes in FERC permit procedures would allow public utilities which are competing with such entrepreneurs to actively pursue those projects.

The Public Power Council has previously endorsed and continues to endorse Federal hydro-electric development for new or at existing federal projects. However, where Federal development is constrained by budgetary or other reasons, utility development of those same projects should be encouraged. Public utilities may be able to bring the projects on line relatively quickly. Federal agencies, such as the Corps of Engineers and the Bureau of Reclamation which have historically developed hydroelectric projects, should pursue enlightened policies which allow public utilities to develop projects, when such development would bring those projects on-line more quickly.

These Subcommittees should also examine the Bureau of Reclamation's policy of charging fees for using water at their hydro projects (the so-called "falling water charge"). Although it is unclear how this use charge is applied, such fees may be inappropriate in certain cases. When a utility simply adds capability to a Bureau project, this fee unjustifiably raises the cost of the project power.

In conclusion, the Public Power Council endorses methods and procedures that lead toward the simplification of the licensing process, in a manner consistent with licensing preference for consumer-owned utilities. We also endorse better coordination among Federal agencies which process hydro applications. We urge these Subcommittees to encourage such simplification and coordination.

PUBLIC UTILITY DISTRICT OF GRANT COUNTY

P.O. BOX 878 • EPHRATA, WASHINGTON 98823 • 509/754-3541

October 8, 1981

Mr. Russell R. Brown
Professional Staff Member
United States Senate
Committee on Energy and Natural Resources
Washington, D.C. 20510

Dear Mr. Brown:

Attached are copies of a Statement on the subject of a site charge on small hydro projects that are developed on irrigation systems. I would appreciate it if you would enter this Statement into the record at the October 19th sub-committee hearings.

Sincerely yours,

Larry D Peterson

Larry D. Peterson
Manager

LDP:s
encs.
cc: John Baird, Attorney, QCBID
Tom Cotton, Quincy Irrigation District
Chan Bailey, East Irrigation District
Russ Smith, South Irrigation District

PUBLIC UTILITY DISTRICT OF GRANT COUNTY
P.O. BOX 878 • EPHRATA, WASHINGTON 98823 • 509/754-3541

October 19, 1981

STATEMENT TO THE SENATE ENERGY & NATURAL RESOURCES COMMITTEE

Sub-Committee on Water & Power
Sub-Committee on Energy Regulation

The Grant County Public Utility District is presently working with the three Columbia Basin Project Irrigation Districts on a small hydro development on an irrigation canal southeast of Quincy, Washington, known as the Quincy Chute Project. The economic feasibility of this project is extremely marginal, in fact, we are proposing to subsidize its development through a melding of existing resources in order to make it possible.

We are also currently having discussions with the Irrigation Districts on the possibility of development of even smaller sites on their irrigation system.

The matter of the proposed site charge by the Federal Government on such low-head hydroelectric developments is a real impediment to their development and in fact will tip the scales against proceeding with marginally feasible projects.

It is ironic to see the federal government on one hand encouraging the development of renewable resources in the interest of helping the country become more energy self-sufficient, while on the other hand, proposing to levy a privilege charge which makes it infeasible to develop some of the potential that exists.

We hope that the merits of making the development of low-head hydro projects possible plus the very specific contractual provisions (Article 55(b) in the repayment contract) between the Federal Government and the Columbia Basin Project Irrigation Districts, which provides that the districts receive all revenues from power plants constructed by them, and which appears to preclude a site charge, will result in agreement between the Department of Interior and the Federal Energy Regulatory Commission that a site charge is not appropriate in the case of the Columbia Basin Project.

We understand that Article 55 (b) is unique and appears only in the repayment contract between the United States and the Columbia Basin Project Irrigation Districts.

Respectfully submitted,

Larry D Peterson

Larry D. Peterson, Manager
Public Utility District of Grant County

LDP:s

STATE OF WASHINGTON
WASHINGTON STATE ENERGY OFFICE
400 E. Union, ER-11 • Olympia, Washington 98504 • (206) 754-0700

October 12, 1981

The Honorable Gordon J. Humphrey
Subcommittee on Energy Regulation
AND
The Honorable Frank H. Murkowski, Chairman
Subcommittee on Water and Power
United States Senate
Dirksen Senate Office Building
Washington, D.C. 20501

Dear Senators Humphrey and Murkowski:

SUBJECT: Development of Hydroelectric Resources/Power Privilege Charge

The Washington State Energy Office (WSEO) has prepared and hereby submits testimony urging that the Federal Energy Regulatory Commission (FERC) not levy an annual "falling waters" or "power privilege" charge against the developers of hydroelectric projects which utilize federal dams or irrigation works. The testimony has been prepared for the October 19, 1981 joint hearing on FERC licensing procedures and the development of hydropower resources.

The imposition of an annual power privilege charge will adversely affect the economic feasibility of irrigation district sponsored hydropower projects and will serve as a barrier against future hydro project development. As a result, fewer of the urgently needed projects will be constructed.

The WSEO believes that it is not in the state or national interest to establish a significant barrier against the rapid deployment of an environmentally benign, renewable resource generating option. The costs of non-development, including an increased probability of electrical energy shortfall, a decrease in national security due to increased reliance on fossil fuels, and a loss in jobs, need not be incurred.

WSEO recommends that the Committee on Energy and Natural Resources take appropriate actions to ensure that annual power privilege charges are not levied against the developers and operators of hydropower projects on federal reclamation facilities.

Sincerely,

Richard Watson
Acting Director

RW/gm:cg

cc: Dave Stevens, Governor's Office
Representative Curtis P. Smith
Senator Frank "Tub" Hansen

Enclosure

STATEMENT OF

GILBERT A. McCOY, P.E.
HYDROELECTRIC SPECIALIST
WASHINGTON STATE ENERGY OFFICE

Mr. Chairman, Members of the Committee:

My name is Gilbert A. McCoy. I am currently employed as a Hydroelectric Specialist with the Washington State Energy Office.

The state of Washington has long relied upon hydroelectric project output to meet electrical power and energy demands. In past years, approximately eighty percent of the state's industrial, commercial, residential and irrigation load has been met with renewable hydroelectric energy.

The bulk of Washington's hydropower output is generated at the large dams which comprise the Federal Columbia River System (FCRS). A recent Corps of Engineers inventory indicates 52 dams with generating capability in the state of Washington. Twenty-three of these dams have a capacity greater than 100 Mw.

The Pacific Northwest is currently in the process of making a difficult transition. Whereas the region has long enjoyed a surplus of abundant, low cost hydroelectric energy, recent energy forecasts indicate that the Pacific Northwest faces possible electrical energy shortfalls of from 2,000 to 4,000 average megawatts (Mw) in the 1980's because of past failures to implement conservation programs or bring additional generating facilities on line.

As most of the better large hydro sites have already been developed, interest has turned towards the development of small hydro facilities. A small hydro facility has an installed capacity between 30 Mw and 100 kw. The Department of Energy established and has operated technical assistance and low interest loan programs for small hydroelectric projects located at the site of existing dams. It was recognized that the development of the power potential of flood control, water supply and irrigation dams could be achieved with minimal environmental impact.

It is the policy of the state of Washington that the development and use of a diverse array of renewable energy resources be encouraged; provided that the development shall be consistent with the statutory environmental policies of the state. Hydroelectric projects located at existing irrigation dams, drop structures, and wasteways can be developed in an environmentally benign manner. Such projects have no anadromous fisheries or habitat loss constraints. Lengthy access roads and new impoundments do not have to be constructed.

The state has been especially supportive of the development of generating potential on irrigation works. The 46th Legislative session (1979) expanded the powers of irrigation districts, allowing them to issue revenue bonds for up to forty years to facilitate the development of hydroelectric facilities. The goal of Washington's hydropower commercialization program is to bring those projects which are economically feasible and environmentally acceptable on line as rapidly as possible.

The federal government has also been supportive of irrigation project development. The Federal Energy Regulatory Commission (FERC) has issued Order No. 76 establishing the "conduit exemption." Small projects located on a conduit, canal or pipeline used primarily for domestic, agricultural, or industrial purposes can apply for an exemption from all or part of the normal federal licensing requirements. The conduit exemption is designed to speed up the licensing process for selected categories of environmentally acceptable projects.

The state bonding and federal licensing exemption incentives, coupled with the passage of the Public Utility Regulatory Policies Act of 1978 (PURPA) resulted in an explosion of interest in hydropower development. The August 1981 Washington Department of Ecology Hydropower Licensing Status Report indicates that the federal or state licensing process has been initiated for 32 irrigation works projects representing 292 Mw of potential installed capacity (see Table 1).

Many of these irrigation projects may not be built. Hydroelectric projects on irrigation works typically exhibit marginal cost-effectiveness as they are only operated during the irrigation season i.e. April to October. Irrigation projects thus have low plant or capacity factors. Wasteway projects typically operate at full capacity only during the off season. As a result, their energy costs are typically relatively high.

Many of the existing federal incentives for hydropower development cannot be utilized by irrigation districts. As irrigation districts have no income tax liability, they cannot use the existing 10 percent investment tax credit or the 11 percent business energy tax credit. Similarly, irrigation districts cannot make use of the accelerated depreciation provisions contained in the Economic Recovery Tax Act of 1981.

Irrigation district project developers are not, however, exempted from the levying of annual charges and fees. Washington state assesses an annual power license fee. The FERC has an annual administrative charge. A state business and occupation (B&O) tax must be paid for power sold outside of the state. Irrigation districts also are subject to repayment fees under reclamation law and must pay all operating and maintenance costs for the district - including those for operating small hydropower projects.

Hydropower projects on irrigation works are not "gold mines." They are not producers of abundant revenue which may be tapped to fill federal and state coffers. Instead they are somewhat marginal projects, capable of producing a considerable quantity of electricity, but also at considerable cost.

There are risks involved in developing and operating a hydroelectric facility. In order for development to proceed, the project developer must envision a revenue stream adequate to offset debt service, annual operating, maintenance and insurance costs; and annual fees and taxes. The remaining revenues or net benefits (if any) serve as an incentive to the project developer to undertake the risk of powerplant construction.

The imposition by the FERC of an annual falling water or power privilege fee equivalent to one half of the net project benefits will greatly reduce the desirability of undertaking irrigation district hydroproject development. Projected benefit streams will diminish while project risk will remain constant. The marginal projects will simply not be constructed. Much needed electrical energy will not be produced.

In closing, the state of Washington is faced with projected electrical energy deficits. The construction of small hydropower projects on irrigation works is supported and can do much to eliminate electrical energy shortfalls. The proposed power privilege fee is perceived as a barrier against an environmentally acceptable category of hydroelectric project development. The establishment of such a barrier is contrary to state and national interests. We urge that the committee on Energy and Natural Resources take appropriate actions to ensure that annual power privilege charges are not levied against the developers and operators of hydropower projects on federal reclamation facilities.

Table 1
Irrigation District Hydroelectric Projects
Washington State

	Project Name	Capacity, Mw	Developer
1.	Antilon Lake Dam	1.8	Lake Chelan Reclamation District
2.	Bumping Dam	31	Roza Irrigation District
3.	Cle Elum Dam	20	City of Ellensburg/Kittitas County PUD #1
4.	Clear Lake Dam	1.7	Yakima - Tieton Irrigation District
5.	Devil's Table Reservoir #1	24	Sunnyside Irrigation District
6.	Devil's Table Reservoir #2	24	Sunnyside Irrigation District
7.	Easton Dam	3	Kittitas County PUD #1
8.	Horn Rapids Dam	1.4	Columbia Irrigation District
9.	Kachess Lake Dam	3.2	City of Ellensburg/Kittitas County PUD #1
10.	Keechelus Lake Dam	4.4	City of Ellensburg/Kittitas County PUD #1
11.	Kittitas Main Canal	15	American Small Farm Institute
12.	Little Rattler	12.4	Sunnyside Irrigation District
13.	Naches - Selah Canal	2.0	Naches - Selah Irrigation District
14.	Peshastin Creek	0.4	Peshastin Irrigation District
15.	Roza Diversion Dam	6	Kittitas County PUD #1
16.	Tieton Dam	16	Yakima - Tieton Irrigation District
17.	Wolf Creek Aquaduct	0.27	Wolf Creek Reclamation District
18.	Zillah Wasteway	10	Sunnyside Irrigation District
19.	Crab Creek Lateral #4	0.6	Columbia Basin Irrigation District

	Project Name	Capacity, Mw	Developer
20.	Eltopia Branch Canal (E.B.C. Mile 4.6)	2.2	S. Columbia Basin Irrigation District
21.	Goose Lake/West Canal	0.7	Columbia Basin Irrigation Districts
22.	Main Canal Headworks	15	S. Columbia Basin Irrigation District
23.	Potholes East Canal Wasteway (P.E.C. Mile 16.4)	0.7	E., S., & Quincy Columbia Basin Irrigation Districts
24.	Potholes East Canal (P.E.C. Mile 66.0)	2.3	S. Columbia Basin Irrigation District
25.	Quincy Chute	7.8	Quincy Columbia Basin Irrigation District
26.	Rocky Coulee Wasteway; Upper & Lower Chutes	2.9, 3.8	Columbia Basin Irrigation Districts
27.	Royal Lake/Crab Creek Lateral	0.43	Columbia Basin Irrigation Districts
28.	Sand Hollow/Royal Branch Canal	1.7	Columbia Basin Irrigation Districts
29.	Scootney Inlet	2.8	E., S. & Quincy Columbia Basin Irrigation Districts
30.	Summer Falls	74	S. Columbia Basin Irrigation Districts
31.	Scootney Wasteway	1.0	Energenics

Total: 32 projects representing 292.5 Mw of potential installed capacity.

TESTIMONY OF EDWARD H. CURLAND
NATIONAL RENEWABLE RESOURCES, INC.

Thank you for the opportunity to testify before the Committee on some of the issues for further development of our nation's hydroelectric power potential. I am Vice President of Finance with National Renewable Resources, Inc., a corporation in the business of managing small-scale hydroelectric development. I appreciate the opportunity to share with the Committee our perception of the potential for hydroelectric development and to ask for your assistance in solving some of the institutional and regulatory obstacles to such developments.

We believe that there is a significant potential for small-scale hydroelectric development at existing dams. But the economics of the projects are generally tight, particularly in the early years of project operation due to the high proportion of capital costs in relation to operating costs. To be feasible, projects will frequently have to be fast-tracked. Private enterprise is ideally suited to make these projects work on schedule and on budget.

We also believe there is an important role to be played by the public sector in encouraging the development of small-scale hydroelectric projects. State and local support and participation in the projects permit optimal coordination with governmental agencies and other water uses.

At the Federal level, Congress has already given substantial encouragement to such projects by enacting the Public Utility Regulation Policies Act of 1978 ("PURPA") and by making available energy tax credits for small-scale hydroelectric development. This encouragement has fostered the private sector development of small-scale hydroelectric power.

These laws, regulations promulgated by the Federal Energy Regulatory Commission and, increasingly, supportive state laws, have fostered a fledging private sector industry which is seeking to develop the hydroelectric potential at existing dams. Like any young industry, the hydroelectric industry is vulnerable to changes in regulatory policies and requires continued Congressional and regulatory support. In this regard, let me mention just a few points and recommendations:

1. It is essential that Congress maintain the policies established by the Public Utility Regulatory Policies Act of 1978 ("PURPA"). Without the exemption from status as a regulated utility and without the requirement that a utility purchase power from a qualifying facility at avoided cost, there would be little or no private sector development of small-scale hydroelectric power. The regulatory burden of being classified as a utility would be greater and the difficulties in marketing the power at a reasonable price would be all but insurmountable. An area of significant concern to us, and we

believe to the industry as a whole, is the continued applicability of PURPA over the life of projects which require the use of substantial debt and equity financing. Some of the state legislatures have addressed this issue, in part, at the state level. It would be very helpful, and we believe consistent with Congressional intent in enacting PURPA, for Congress to enact legislation ensuring that PURPA standards and exemptions will continue to apply over the life of the project once it is built.

2. It is vital that energy tax credits continue to be available for small-scale hydroelectric development. Such development is capital intensive and requires such credits to attract the necessary financing. Currently, high long-term interest rates make the cost of constructing hydroelectric projects even higher than when Congress made the energy tax credits available to hydroelectric projects some two years ago. While there is substantial private sector interest in small-scale hydroelectric development at the preliminary permit stage, it is our judgment, based on reconnaisance and feasibility work on a number of sites and also based on more detailed work on several projects we hope to develop over the next three years, that there are few small-scale hydroelectric projects that would be feasible for private sector development without the availability of energy tax credits. Moreover, our Company and other companies in the private sector have spent considerable time and money on such development. We have done so in the

expectation that energy tax credits will be available to make projects feasible. We would hope that Congress will not take away such credits after having enacted them so recently.

3. Some of the projects we are working on are at U. S. Army Corps of Engineers' dams. In the course of doing engineering studies on these projects, we have found that projects devoted to flood control may have hydroelectric potential, but to maximize this potential and to make projects economically feasible, it may be necessary to make small adjustments in the minimum pool levels at these reservoirs. These minor modifications could greatly increase the extent of energy production at these reservoirs by providing for higher heads and greater turbine efficiencies. Of course, such modifications of minimum pool levels should only be done when and if such changes do not significantly effect the primary flood control purpose. However, we suggest that Congress consider sufficient delegation of authority to the U. S. Army Corps of Engineers. The Corps can review studies done by hydroelectric developers and where appropriate, grant a modification in minimum pool levels.

4. There are several Federal dams with small-scale hydroelectric potential which were originally authorized for Federal power development but which have not been developed for such purposes. One such site on which we did preliminary engineering studies was first authorized for Federal development over 30 years ago. We would suggest that unless Federal development is anticipated in the near term (for instance, over the

next five years), such sites be de-authorized so that local governments and private industry can study the projects and apply for licenses to develop power potential.

I thank you for this opportunity to submit testimony before the Committee. We appreciate the encouragement which Congress has given our industry.

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November 4, 1981

The Honorable Frank H. Murkowski, Chairman
Senate Subcommittee on Water and Power
Senate Committee on Energy and Natural Resources

The Honorable Gordon J. Humphrey, Chairman
Subcommittee on Energy Regulation,
Senate Committee on Energy and Natural Resources
3106 Dirksen Senate Office Building
Washington, D.C. 20510

Re: Hearings on Hydroelectric Power Development

Dear Chairmen Murkowski and Humphrey:

This statement is made primarily on behalf of several California political subdivisions each of which is currently seeking an FERC license for a major unconstructed hydroelectric project. These entities are the Calaveras County Water District, license applicant for FERC Project No. 2409, the Kings River Conservation District, license applicant for FERC Project No. 2890 and El Dorado County Water Agency and El Dorado Irrigation District, joint license applicants for FERC Project No. 2761.

We wish to make clear that we appreciate the great workload of hydroelectric permit, license, and exemption applications which the FERC Staff is currently straining under. The increased awareness of the value of renewable resources, provisions of the Windfall Profit Tax Act giving great financial incentives to private developers, streamlining of FERC permitting and licensing procedures, and the high cost of alternative fuels, has resulted in a flood of permit and license applications at FERC. It seems clear that the Commission needs more money, more staff, and perhaps a different internal structure to process this workload and we would certainly urge and support all such remedial efforts. However, we also believe that more effort and reorganization is required by FERC to increase the efficiency of its processes for licensing major unconstructed projects. This suggestion is made because of the processing delay suffered by these and other applicants seeking licenses for major unconstructed projects. We are talking particularly about the delay incurred from the time when the licensing proceeding is "fully submitted" and all the written evidence is in, until the time a decision is made on whether even further proceedings in the form of a costly formal evidentiary hearing are required or whether the Commission can move promptly to license the project. The California license applicants in these proceedings have urged that project opponents have not met their burden of showing the need for an evidentiary hearing. It is their view that a project opponent must do more than merely make conclusionary statements about project need or impacts and must in fact proffer evidence to support its allegations of the existence of material issues of adjudicative fact. This is a very important issue because conducting an evidentiary hearing is a very expensive process, can delay licensing of a project at least two years, and should not be undertaken unless the need for such a hearing is clearly demonstrated. The applicants have waited for what seems to be an unreasonably lengthy period for a decision on this important issue.

It should be understood that major unconstructed hydro projects undergo a strenuous public review process prior to licensing by FERC. The original application is subjected to Federal, state, and local public agency comment. Any interested party is given the opportunity to comment, protest, or to file a petition to intervene in the proceeding. This process often results in revisions to the application as has been the case for the projects proposed by these California entities. The FERC Staff also prepares a draft environmental impact statement (DEIS) utilizing its own research, information from the license applicant's Exhibit W-environmental report, and comments made by others on that report. This DEIS process is commenced with a "scoping" session which is really a public hearing, held by the FERC staff in the project area, at which all those wishing to raise subjects for consideration in the EIS are heard. Public comments are also sought on the DEIS and the opportunity to petition to intervene is granted on the basis of the DEIS just as it is on the filing of the original license application which is noticed in the Federal Register and local newspapers. Finally, the final environmental impact statement (FEIS) is prepared and that also is made available for public scrutiny and comment. In addition, as the Commission did in all three of the proceedings referenced, local public meetings are held to allow interested members of the public to state their views on the project. At this point FERC will have compiled a very extensive record from which it can be determined whether a further formal hearing is necessary and, if not, whether the record justifies issuance of a license for the project. It should be recognized that there may also have occurred parallel proceedings at the State level on the State environmental impact report and many identical issues may have been raised in state water rights proceedings. Indeed in one of the matters referenced there has been litigation in the State Court under the California Environmental Quality Act, which was resolved in favor of the project. There have even been hearings held by the Corps of Engineers concerning its authority to grant §404 (dredge and fill) permits under the Clean Water Act.

These license applicants are greatly concerned about the delay which has occurred between completion of the FEIS, holding of the local public meetings, and a decision on the need for an evidentiary hearing. In one of the license proceedings referred to here, the original application was filed by the Calaveras County Water District for Project No. 2409 in 1963 in competition with a competing license applicant. After a full evidentiary hearing on the competing license applications the Presiding Examiner, (now called an Administrative Law Judge) determined that a license should not be issued to the successful competing applicant (Calaveras) on the basis that a market for the power had not been demonstrated because there was at that time no signed power purchase contract. The application remained inactive for a number of years until 1975 when a new application was filed by the District. Finally by November 1979 a DEIS was issued which was revised and an FEIS issued in June of 1980. It was not until six months later, December of 1980, that the Commission held local public meetings on the project. Nearly eleven months later, the Staff has still not made a decision on the question of whether or not an evidentiary hearing is required in this proceeding. Project No. 2409 will have an installed capacity of 200,000 kw, produce 560,000,000 kwh of electrical generation annually and provide 189,000 acre-feet of water storage capacity. Furthermore, generation from the project will eliminate the need to burn 1,000,000 barrels of oil annually, but these benefits still face an uncertain future.

Another of the license applicants, the Kings River Conservation District, filed its application for license for Project No. 2890 in November of 1978 following a study of this and other potential projects under a preliminary permit granted in 1976. Project No. 2890 will have an installed capacity of 120,000 kw, generate 360,000,000 kwh annually, provide 90,000 acre-feet of water storage and eliminate the burning of 600,000 barrels of oil annually. The draft environmental impact statement was issued for the project in November of 1979 and the FEIS was issued in August of 1980. Local public meetings were held on the project in October of 1980. One year later there is still no Staff recommendation or Commission decision on the need to hold an evidentiary hearing or a decision to issue a license for this project.

The last project to be discussed involves an application which was filed jointly in November 1979 by the El Dorado County Water Agency and the El Dorado Irrigation District for Project No. 2761. This project offers 110,400 kw of installed capacity, 470,000,000 kwh of generation and 175,000 acre-feet of water storage. The project generation can eliminate the need to burn 730,000 barrels of oil annually. The draft environmental impact statement for this project was issued in October of 1980 and the final environmental impact statement was issued in May of 1981. The local public hearings were not held until five months later, during October of 1981. While it is thus too soon to expect a decision in this matter, the jury is still out on how long it will take the Staff but it is earnestly hoped it will not take the extended period which has already passed on the other two projects with no action by FERC.

The license applicants are concerned about this delay because these projects offer very important and needed multiple benefits which become more expensive every month that they are delayed in licensing. The projects discussed above would together supply installed capacity of 430,400 kilowatts, 1,390,000,000 kwh of electrical energy, 454,000 acre-feet of water storage capacity and would displace the burning of 2,330,000 barrels of oil annually. Because of inflation and high interest rates the costs of delay to these projects is approximately $9 million per month and $100 million per year. Those are costs which will ultimately have to be paid by the purchasers of the power from these projects.

It should not take so long to reach a determination in a case once it has been fully submitted for decision. If there were a concentrated effort on reaching a determination in cases which have reached this point in their processing a decision could be reached reasonably quickly. It appears that the Staff must work on these cases as just another part of normal workload along with many other matters of arguably less urgency. Perhaps there should be some mechanism providing for Staff members who have been assigned to work on these projects to take a "task force" approach to projects reaching this stage of processing in order to permit a prompt Commission decision. The license applicants in these proceedings have urged prompt decision making because of the very serious costs of delay, however no change in the method of reaching decisions appears to have resulted. Some new mechanism, or "fast track," at this stage of a proceeding at least is clearly needed.

Apart from the decision-making problem referred to above, there are several areas at FERC which experience suggests require prompt remedial attention. One area concerns the sad state of FERC's official reports and indexes. Section 552(a)(2) of the Administrative Procedure Act, provides in relevant part that:

> Each agency, in accordance with published rules, shall make available for public inspection and copying --
>
> (A) final opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of cases . . .
>
> unless the materials are promptly published and copies offered for sale... . Each agency also shall maintain and make available for public inspection and copying a current index providing identifying information for the public as to any matter issued, adopted, or promulgated after July 4, 1967, and required by this paragraph to be made available or published. A final order, opinion, statement of policy, interpretation, or staff manual or instruction that affects a member of the public may be relied on, used, or cited as precedent by an agency against the party other than an agency only if : (i) it has been indexed and either made available or published as provided by this paragraph; or (ii) the party has actual and timely notice of the terms thereof. (Emphasis added.)

Although the Commission issues its official orders on a daily basis there is no current official reporter and collector of these decisions and no useful index to these decisions. The last official FERC (FPC) report is 56 FPC which covers Commission Orders issued through 1976. The last published index covers materials only through 1966. The lack of an official reporter makes practice before the Commission much more difficult than it should be because of the difficulty of locating precedential holdings. This is not a new problem but it has persisted for far too long, to a point of inefficiency. The Commission should be directed to allocate sufficient funds to bring its official reporter system up to date and the Congress should appropriate additional funds as necessary in this regard.

Another matter which should be brought to the attention of the Subcommittees and monitored as necessary, are recent actions of the Commission in permitting and licensing proceedings tending to be "arbitrary and capricious" in nature. This is a result of the Commission's adoption of the Staff's approach to a very heavy workload. The Staff is attempting to apply its rules and regulations in connection with preliminary permits in particular in a mechanistic way, almost by rote, in order to eliminate as many filings as possible and to clear its backlog. In many cases the rules the Staff is attempting to implement are not clear in the first instance and the Staff's interpretation of the rules actually reaches a result at cross purposes with their underlying intent and with provisions of the Federal Power Act. Appealing these decisions through several levels of Commission review and even to the courts can be an onerous and cost prohibitive process, especially in the case of smaller projects having sensitive economic feasibilities.

Finally, some general comments are made with regard to the preference granted to States and municipalities by Section 7 of the Federal Power Act. The "municipal" preference was clearly intended by the drafters of the Federal Water Power Act which was enacted in 1920. See FERC Opinion No. 88 (June 27, 1980). The drafters of the Act viewed the Nation's hydroelectric resources and waters as belonging to the people of the Nation and determined that it was in the public interest that these resources should be held in public hands. Therefore they granted the preference found in Section 7(a) of the Federal Power Act which provides:

> In issuing preliminary permits hereunder or licenses where no preliminary permit has been issued and in issuing licenses to new licensees under Section 15 hereof the Commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the Commission equally well adapted, or shall within a reasonable time to be fixed by the Commission be made equally well adapted, to conserve and utilize in the public interest the water resources of the region...

The Honorable Frank H. Murkowski
The Honorable Gordon J. Humphrey
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November 4, 1981

This preference is especially important today when private capital and developers, encouraged by the substantial tax incentives granted them by the Windfall Profits Tax Act, are filing thousands of permit and license applications across the country. Public entities which do not have the benefit of these immediate financial incentives at least have in Section 7(a) a defensive tool which can save many of these sites for ultimate public ownership and operation. The municipal preference granted by Section 7 of the Federal Power Act should not be weakened under the guise of regulatory "streamlining" or "administrative efficiency" and any attempts to do so should be rejected. FERC has implemented its case by case exemption of projects of five megawatts or less to eliminate the municipal preference and it should not be allowed to extend this approach to exemptions of projects of up to 15 mw as is currently being contemplated.

As noted at the outset, we are not unappreciative of the efforts that FERC is making in trying to deal with a difficult situation. It is however believed the above areas need remedial treatment and deserve the Subcommittees' attention.

We thank you for the opportunity to make these remarks a part of the record of these hearings.

Respectfully submitted,

McCARTY, NOONE & WILLIAMS

Christopher D. Williams

Christopher D. Williams

Special Counsel to Calaveras
County Water District, Kings
River Conservation District,
El Dorado County Water Agency
and El Dorado Irrigation District

Department of
Water Resources

Bulletin 211

Small Hydroelectric Potential at Existing Hydraulic Structures in California

April 1981

Bulletin 211 was partially funded by a cooperative agreement (No. DE-FC-49-80-R9-10019.000) with the U.S. Department of Energy.

This Bulletin responds to Chapter 933, Statutes of 1978:

"... It is in the best interests of the state that the existing dams and hydraulic structures identified in the Department of Water Resources' previous surveys be further studied to determine the feasibility and cost-effectiveness of equipping these dams and hydraulic structures with electric power-generating facilities ..."

The legislation, Senate Bill 1834, was authored by Senator Alfred Alquist.

Huey D. Johnson
Secretary for Resources
The Resources Agency

Edmund G. Brown Jr.
Governor
State of California

Ronald B. Robie
Director
Department of Water Resources

FOREWORD

To help meet California's increasing need for electricity, the Department of Water Resources is actively studying potential sources of hydroelectric energy in the State. The development of small hydroelectric generation facilities at existing hydraulic structures is one environmentally sound energy resource that merits the highest priority.

In 1978, the California Legislature enacted Senate Bill 1834 (Chapter 933, Statutes of 1978, authored by Senator Alfred Alquist) which directed the Department of Water Resources to study the feasibility and cost effectiveness of equipping existing dams and other hydraulic structures with electrical power-generating equipment.

The Department began its study by identifying 285 potential sites for developing small hydroelectric facilities through questionnaires sent to irrigation districts, Federal and State water agencies, and public and private utilities. These sites would have a total capacity of about 500 megawatts and an annual energy generation of 2.4 billion kilowatthours. Through this survey and subsequent studies, the Department determined that 240 out of 285 potential sites, representing 99 percent of the total potential capacity, would be cost effective by 1989. This could supply the residential needs of one million people and would eliminate the need of burning 4 million barrels of oil yearly in a thermal power plant.

In January 1980, Governor Edmund G. Brown Jr. established a task force headed by this Department and comprised of representatives from nine State agencies to support and encourage the construction of power plants at existing dams, canals, and pipelines. Through the efforts of this task force, the process for obtaining State permits and approvals for hydroelectric power plants has been streamlined. The Department of Water Resources, in cooperation with the U. S. Department of Energy, has also established an "Outreach Program" to assist developers with procedural requirements and to provide loan information for small hydroelectric projects. Information regarding hydroelectric development can be obtained by telephoning (916) 323-0103.

This study is a comprehensive analysis of small hydropower, and is a significant step towards establishing energy independence, not only in California, but also elsewhere in the nation. As part of meeting its goal of satisfying 70 percent of the State Water Project's energy needs from renewable resources, the Department of Water Resources has scheduled the construction of 15 small hydroelectric power plants at sites on the State Water Project.

Small hydro efforts are growing. As a result, the State should gain about 500 megawatts of small hydroelectric capacity within the next ten years. This is a significant step in achieving the State's and nation's energy goals.

Ronald B. Robie

Ronald B. Robie, Director
Department of Water Resources
The Resources Agency
State of California

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The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resources matters. The nine-member citizen Commission provides a water resources forum for the people of the State, acts as a liaison between the legislative and executive branches of State Government and coordinates Federal, State, and local water resources efforts.

SUMMARY

The Department of Water Resources studied the feasibility and cost effectiveness of retrofitting existing hydraulic structures within the State with facilities for generating hydroelectric power.

A statewide survey identified 285 sites--137 dams, 53 canals, and 95 pipelines--where hydropower could be developed. These sites offered a combined potential for generating 510 megawatts (MW) of power with an annual energy production of 2.4 billion kilowatthours (kWh).

The 285 sites were categorized into six groups, based on the type and size of existing hydraulic structure. From these, 49 sites were selected for field investigations, and preliminary feasibility studies were conducted at 28 of these representative sites. Based on these studies, the cost effectiveness of each site was determined, and these cost data were used to estimate the cost effectiveness of the remaining sites for which limited data were available.

The study showed that 167 (59%) of the 285 sites are cost effective if developed immediately for initial operation in 1984. These sites represent an installed capacity of about 468 MW -- 92% of the potential power -- and an estimated annual generation of 2.25 billion kWh (95%). An additional 73 (26%) of the sites would be cost effective by 1989. These sites represent an installed capacity of 36 MW (7% of the potential power) and an annual generation of 120 million kWh (5%). Only 45 (15%) of the sites studied representing an installed capacity of 6 MW — 1% of the potential power -- and an estimated annual generation 10 million kWh (0.4%) are less suitable for immediate development. These sites would have to operate at a loss for in excess of 5 years before becoming cost effective under current fuel cost projections.

Progress in the development of small hydroelectric projects is illustrated by the number of projects completed or under construction and the number of permit and license applications filed with the Federal Energy Regulatory Commission (FERC). Out of the 285 potential projects 80 facilities -- representing over 355 MW of the total installed capacity of 510 MW -- have been completed, are under construction, or have had applications filed for them with FERC.

The results of this study emphasize the value of utilizing all of our potential energy resources. Developing the small hydroelectric facilities identified here would make available over 2.4 billion kWh of electrical energy annually. If oil were used to generate this energy, 4 million barrels would be required each year. In addition, 2.4 billion kWh of electrical energy represents a value of approximately $120 million in revenue each year. Development of this resource would significantly reduce California's dependence on imported oil, provide a dependable, environmentally sound source of electrical energy, and would be an important contribution to the nation's goal for energy independence.

FIGURE 1

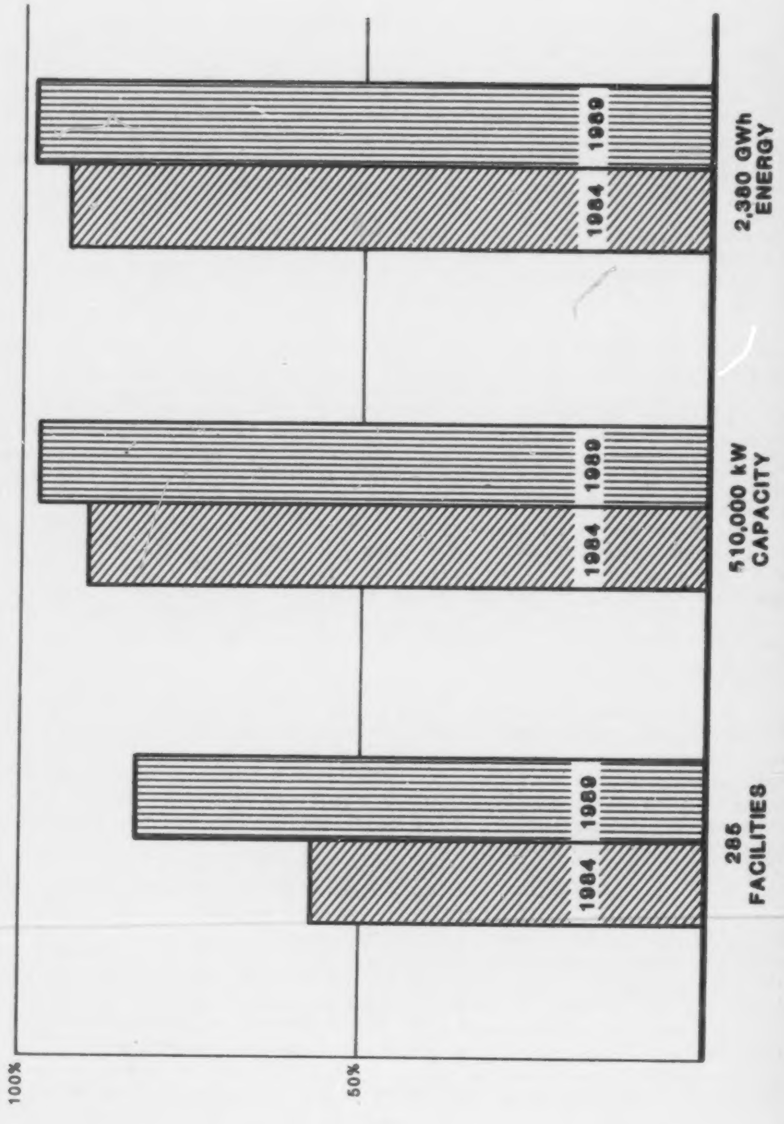


Figure 1. Number, Capacity, and Energy of Cost Effective Projects

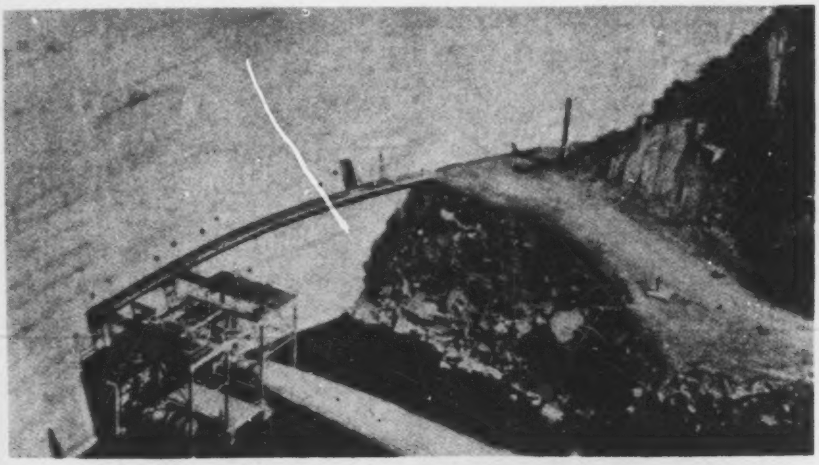
CHAPTER I

INTRODUCTION

This bulletin reports the results of a study of the feasibility of developing small hydroelectric power-generating facilities at California's existing hydraulic structures, such as dams, canals, and pipelines. By identifying potential sites for such development and evaluating their cost effectiveness, the Department of Water Resources hopes to encourage private, as well as public, entities to invest in the state's energy future.

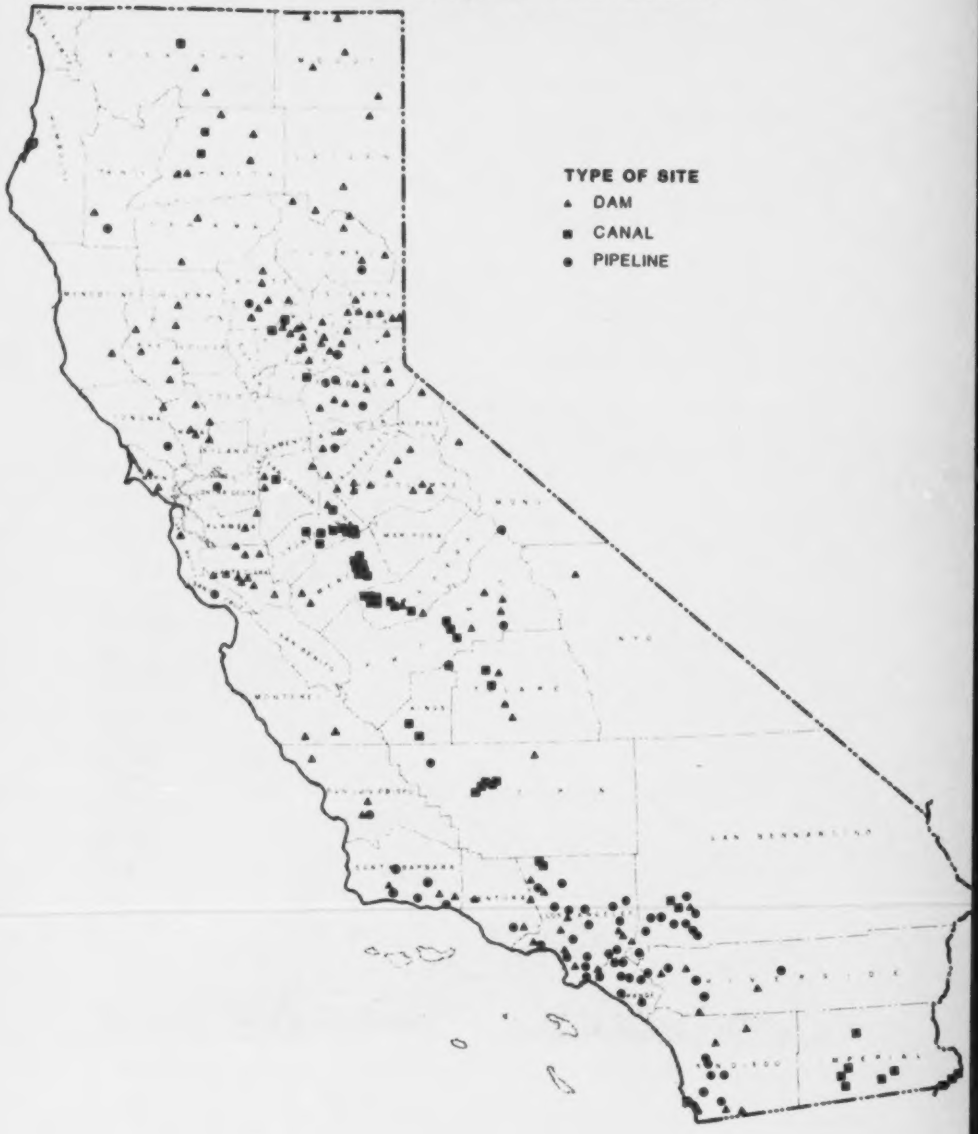
Although the Department only evaluated sites within the state, these hydraulic structures also typify those that commonly occur in other states. Because of this, the results of this study are freely transferrable nationwide, and the report's findings should be beneficial to any state that is concerned about its energy independence.

In 1974, a departmental report, "Hydroelectric Energy Potential in California" (Bulletin 194), identified potential sites for hydroelectric facilities that had a generation potential of more than 25 million kilowatthours annually. The report inventoried hydroelectric developments that had been studied previously, but those which might warrant reevaluation in view of quadrupling oil prices. Most of the projects required the construction of new dams and reservoirs or the enlargement of existing facilities.



Lake Berryessa (Monticello Dam), on Putah Creek in Napa County, is owned by the U. S. Water and Power Resources Service. A 16 000-kilowatt hydroelectric power plant at this site could generate 43 million kilowatthours of electricity per year. This amount of energy would supply the annual electrical residential needs of 20,500 people. (Photo by DWR Energy Division)

Figure 2 Potential Small Hydroelectric Sites at Existing Hydraulic Facilities

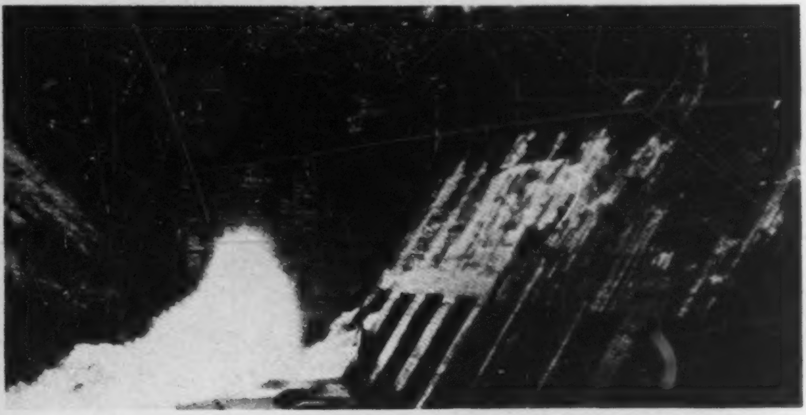

TYPE OF SITE
▲ DAM
■ CANAL
● PIPELINE

In 1976, the Department sent questionnaires to over 800 California water agencies, utilities, and federal agencies requesting them to identify and provide information on potential small hydroelectric projects that could be constructed at existing hydraulic facilities, such as dams, canals and pipelines. A report, "A Survey of Small Hydroelectric Potential at Existing Sites in California," was published as Bulletin 205 in June 1979 based on this information. It identified 212 potential hydroelectric projects that could be developed at existing installations.

The Legislative directive (SB 1834, authored by Senator Alquist) to conduct a feasibility study became more important during the past year than was originally anticipated in 1978. At the time of the first oil crisis in 1973, the average cost of oil used to generate electrical energy in California was $5 per barrel. The cost remained reasonably stable at about $15 per barrel from 1975 through 1978. After the political unrest in Iran in late 1978, the price of oil jumped. Shortages reappeared, and by late 1979 the price of oil increased to about $25 per barrel and even higher on the spot market. The average price of oil increased to about $30 per barrel by mid-1980.

Projections prepared by the California Energy Commission in late 1979 indicate substantial increases in the price of oil will continue until synthetic fuels become available. Since 50 percent of California's electricity is generated using oil, the costs of generating electrical energy will continue to increase. Thus California's potential hydroelectric resources become increasingly more valuable.

In 1980, questionnaires were sent to utilities, water agencies, and irrigation districts that did not reply to the 1976 survey. About 75 additional existing facilities were identified for a total of 285 locations where small power plants could be constructed (Figure 2).



Clear Lake Impounding Dam, on Cache Creek in Lake County, is owned by the Yolo County Flood Control and Water Conservation District. A 2 000-kilowatt hydroelectric power plant at this site could generate 7.6 million kilowatthours of electricity per year. This amount of energy would supply the annual electrical residential needs of 3,600 people. (Photo by DWR Northern District, Red Bluff)

Since it was not possible to investigate each of the 285 potential sites, the Department developed a three-phase evaluation program (Chapter III, Figure 6). During the first phase, the 285 hydraulic facilities were classified into six categories based on the size and type of facility. Forty-nine of these facilities were selected for field investigations during the second phase. These facilities were representative of the six categories. After visiting these facilities and assessing them, the Department selected 28 facilities which best represented most of the facilities in California. A preliminary feasibility study of each of these 28 facilities was conducted during the third phase. The information from the 28 studies was supplemented by 42 feasibility reports prepared by independent consultants hired directly by facility owners. The results of the Department's 28 preliminary feasibility studies are discussed in Appendix C; data taken from feasibility studies conducted by others are presented in Appendix D. The data from the 28 studies, supplemented by cost information from the reports prepared by independent consultants, were used to evaluate the cost effectiveness of all potential facilities in California. This assessment of statewide potential is discussed in Chapter III.

Small Hydroelectric Technology

Small hydroelectric technology was extensively developed in this country from the late 1800s into the 1940s. Very few small hydroelectric plants have been installed between 1950 and 1975, because of the more favorable economics of large steam-electric plants. In fact, about 3,000 hydroelectric plants have been retired from service during the period from 1930 to 1970. A recent study shows that as many as 2,150 of these plants representing 1 300 MW could readily be returned to production.

Lake Redding (ACID Diversion Dam), on the Sacramento River in Shasta County, is owned by the Anderson-Cottonwood Irrigation District. A 9 000-kilowatt hydroelectric power plant at this site could generate 50 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 85,300 barrels of oil annually in a fossil-fuel power plant.
(Photo by DWR Energy Division)

Over the past 30 years, small hydroelectric technical development also declined, and turbine manufacturing facilities were either abandoned or fell into general disuse. During this time, European and Asian manufacturers continued to manufacture small hydraulic turbines, but primarily for power generation locally or for use in remote areas.

Due to recent events, American manufacturers have renewed interest in supplying hydraulic turbines. Allis-Chalmers Company, a major manufacturer, has designed a line of standard horizontal tube-type turbines, which are available in ten sizes ranging between 50 kW and 7000 kW of capacity and for heads up to 18.3 metres (60 feet). Another manufacturer, James E. Leffel Company, has joined with Bofers-Nahab of Sweden and Tampella of Finland and is in the process of enlarging its American facilities to produce principally site-specific vertical-type turbines. The China National Machinery and Equipment Export Corporation plans to aggressively market its hydroelectric equipment in the United States. The Schneider Lift Translator Company builds a device in the United States for producing power under lowhead conditions. The device resembles a series of venetian blinds (hydrofoils) connected to an endless chain over a drum and shaft. The lift translator is available in sizes from 1 kW to 5 000 kW. Ossberger turbines (cross-flow) manufactured in West Germany are available for heads ranging from 1 metre to 200 metres (3 to 660 feet). The highest output per unit is about 1 000 kW. While not producing turbines at its own facilities, General Electric Company has arranged for Hitachi, a Japanese firm, to supply turbines for its generators. Although other American firms can supply hydraulic turbines in the 500 kW to 3000 kW range, the turbines used in new facilities would most probably be manufactured in Sweden, Canada, Switzerland, Norway, Austria, France, China, or Japan.

The principal characteristic of any hydroelectric facility is the combination of head and streamflow that is specific to its site. The head available at the site usually dictates the type of turbine to be used, and streamflow is an important factor in determining its capacity. The most efficient design for a particular hydroelectric site is one designed for the site's conditions. Standardized turbines can save time and manufacturing costs, but a hydraulic turbine operates most efficiently over a narrow range of operating conditions, and outside of that range, the efficiency of the installation decreases.

There are two general types of hydraulic turbines: the impulse turbine which has one or more jets that discharge water onto the buckets of a runner, and the reaction turbine, which is submerged in the streamflow and can be either a Francis type (mixed water flow) or propeller type (axial water flow). Both Francis and propeller turbines may be mounted horizontally or vertically. Propeller turbines can also be supplied with either fixed or variable pitch blades (the variable pitch propeller type is sometimes referred to as a Kaplan turbine).

Impulse turbines may have some application for small hydroelectric installations with very high heads, but for comparable head and capacity, the reaction turbine generally costs less to manufacture. More information on turbines is given in Appendix I.

Environmental Issues

Environmental degradation, a principal concern with most energy development projects, is generally not a serious problem with the installation of small hydroelectric facilities at existing dams, canals, or pipelines. Since these hydraulic structures are already in place, and the small hydroelectric units are relatively minor additions to them, only minimal environmental impacts occur. A potential impact on the environment can usually be avoided by thoughtful design and construction.

In a few cases where the impacts from secondary activities may have some significance, the impacts should be considered, case-by-case, separate from any impact the project itself might have. Construction of the project, for example, might generate dust and noise, increase local traffic erosion, silting, and turbidity in waterways, and remove vegetation. Any serious threat to the environment could be minimized by scheduling construction to avoid certain critical seasons and by exercising care.

Operation of the façility could also have some impact. The operation of generators could increase noise levels and increase minor emissions of ozone, but existing energy dissipaters at many facilities are often noisier than the turbines and generators together.

Various forms of wildlife could be affected by hydroelectric development. If the flow regime is changed this can affect fish. But turbine/generators can be installed without altering the flow pattern. Although turbines are generally less harmful to fish than energy dissipaters, fish can be injured or killed by passage through turbines. The Endangered Species Act requires the Federal Energy Regulatory Commission (FERC) to assure that the development of any site will not interfere with or destroy endangered species.

FERC has simplified licensing procedures, thereby greatly reducing the time required to process applications (Appendix F). Site developers, however, will have to comply with the California Environmental Quality Act (CEQA) and obtain several federal, state, and local approvals. The environmental assessment and approval process will require a minimum of one year (Chapter IV, Figure 13). In general, small hydroelectric recovery facilities can be installed and begin service within 30 to 36 months, as compared with the 10 to 15 years often necessary for major projects at new sites.

The overall impact of small hydroelectric development would be beneficial. Development can be combined with various fish and wildlife projects to create improved access for fishing, boating, and other recreational activities. Since hydroelectric power displaces power generated by nonrenewable resources, it conserves natural resources and reduces the need for more destructive activities such as mining and drilling.

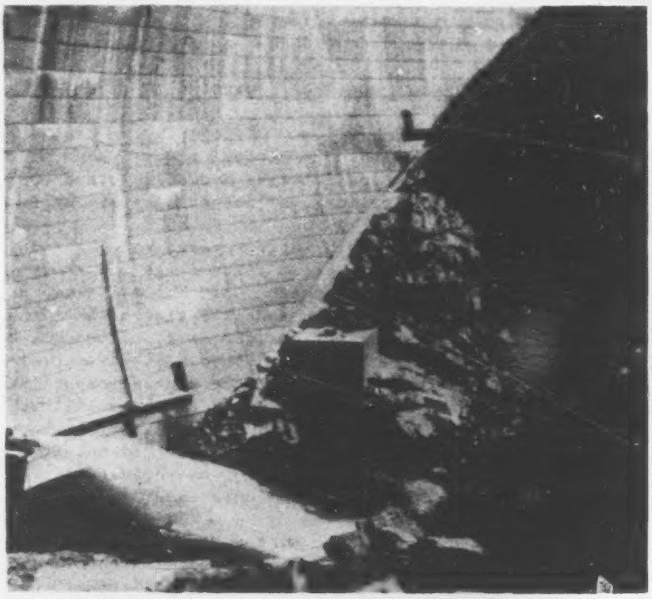
Small hydroelectric development will contribute significantly to the expansion of our nation's energy resources in an environmentally responsible manner.

Economic Issues

The lack of a ready market for power generated by small hydroelectric facilities significantly deterred development prior to the enactment of the

Public Utility Regulatory Policies Act (PURPA) by Congress in 1978. PURPA and the policy of the California Public Utilities Commission (CPUC) created a market for this power by requiring electric utilities to purchase power from small power production facilities including hydroelectric projects at an "avoided cost." Basically, PURPA guarantees a market for power from small hydroelectric generation at a rate equal to the cost for the utility to generate the power itself or purchase the power from another source. In purchasing this power, the utility can thereby avoid having to produce or purchase the power. This avoided-cost pricing is discussed in Chapter II.

Generally, it will take about 24 months to prepare preliminary feasibility study, obtain state and local approvals, and a FERC license. This period accounts for about two-thirds of a project's development schedule, and 20 percent of the total project cost. Title IV of PURPA promotes the development of potential facilities by providing loans for the necessary feasiblity studies and license applications--if the project is not



Slab Creek Dam, on the South Fork of the American River in El Dorado County, is owned by the Sacramento Municipal Utility District. A 400-kilowatt hydroelectric power plant at this site could generate 3.0 million kilowatthours of electricity annually. This amount of energy would supply the annual electrical residential needs of 1,400 people. (Photo by DWR Division of Safety of Dams) feasible, the debt can be forgiven. The financing of projects is discussed more fully in Appendix H.

Small hydroelectric development can have a socioeconomic effect as well. A number of temporary jobs are created during the construction of a project. Afterwards, permanent jobs are created for workers who must maintain and operate the facility.

These projects provide excellent opportunities for training and employing the unemployed. The Comprehensive Employment and Training Act (CETA) provides federal funds for establishing hydroelectric power redevelopment projects that will employ and train unemployed youths.

Finally, small hydroelectric development will lessen the nation's balance-of-payments deficit by reducing oil imports; this, in turn, will reduce inflationary pressures. Besides decreasing the country's dependence on imported energy supplies, small hydroelectric facilities can allow individual communities to become more self-reliant in the production of energy. This dispersion of power-generating facilities will be most benefical to our nation's goal for energy independence and security.

Retrofitting Problems and Their Solution

Each potential small hydroelectric facility differs in the technical characteristics of the head and flow needed to produce power; they can also differ because of the intended uses of the existing hydraulic structure. These uses include flood control, irrigation, and domestic water supply.

Flood control dams use storage space in their reservoirs to absorb flood flows; releases from these reservoirs tend to be large and short lived. In a single-purpose flood control project, only minimal flows are released downstream for irrigation and in-stream uses during most of the year. The heavy flows released for short periods during flood control cannot be used economically to produce hydroelectric power. Flood control and power generation could be coordinated to use reservoir storage capacity more efficiently through agreements with the operators of the facility.

The original designs of many flood control facilities did not provide for the tunnels, conduits, or waterways necessary for hydroelectric generation. The problems this creates must be studied on a case-by-case basis.

Irrigation dams are designed to conserve winter and spring runoff for release later during the summer. Generally, irrigation releases are largest from May through July and taper off from August through October, depending on the amount of storage available. Irrigation facilities are particularly suited to being retrofitted for hydroelectric generation because the heads and flows are significant and the major releases correspond with peak summer demand for electric power. In many cases, the installation of hydroelectric facilities at irrigation dams requires only minor alterations to the existing facility and its operation.

Water distribution systems use pipelines to transport water from one place to another. The cost usually limits the size of pipe used in most cases. The limited power head that does exist is often further reduced by the friction of the water flowing in the pipes. Irrigation and municipal pipelines carry heavier flows during summer months; therefore, the hydraulic head available for the generation of electric power can be lower during the season when peak demand for electrical energy occurs.

Pipelines are often constructed of sections of precast concrete and serve as enclosed waterways. This type of conduit cannot be pressurized for use as a penstock for carrying the water to a power plant.

The addition of hydroelectric power generation capacity at existing hydraulic structures must be compatible with the existing operation of the facility. At a flood control dam for example, if the existing outlet conduit is to be used as a penstock, modification must be accomplished without restricting full-flood flow releases. The existing outlet works and specific site conditions will determine how this might be accomplished.

For irrigation dams, the additional hydroelectric generation unit itself can be the by-pass around the existing outlet valve that controls the irrigation releases. With an irrigation canal, sufficient hydraulic capacity must be available at the site to allow the full canal flow to pass if an outage of the hydroelectric units occurs during the irrigation season.

Hydraulic turbines can be operated over a range of about 50 to 115 percent of the rated flows and over a range of about 50 to 150 percent of the rated head. For some sites where large variations occur, this equipment limitation can restrict the amount of electrical energy actually generated to less than the potential generation calculated for the facility.

Physical and Hydrologic Requirements

The amount of electrical energy that can be produced annually is the single most important factor in determining the cost effectiveness of developing hydroelectric power generation at an existing facility. The amount of generation is related directly to how much water is available, for how long, and under what hydraulic head.

The physical layout of an existing structure must be evaluated first. The data that must be obtained include the physical dimensions of the dam, canal, or pipeline; maximum and minimum hydraulic heads; tailwater level; rating curves for outlets and pipelines; relationships between the storage capacity of the reservoir and its elevation; and other operational criteria such as flood control restrictions on the reservoir, the amount and duration of flows from the facility, and the minimum flow requirements for instream uses.

Once the physical parameters of a facility are known, hydrologic data must be obtained before the average annual electrical generation can be calculated. These data include determining the drainage area; average daily or monthly flows over a ten- to fifty-year period; flow duration curves, conduit and outlet rating curves, effective hydraulic head-duration data; evaporation and seepage losses; and minimum instream flow requirements.

Daily flow data can be used to construct a flow-duration curve from which the facility's capacity and energy potential can be determined, and the annual electrical generation can be estimated. At most facilities, flow records have been kept since the facility was built and are available from the owner. In a few cases where these records are not available, records can be obtained from stream gaging stations and reservoir water recorders near the specific site. Some of these records are also available through various government agencies. The U. S. Geological Survey publishes continuous flow data on major streams and rivers; other agencies such as the U. S. Army Corps of Engineers, the Water and Power Resources Service, and the Soil Conservation Service also maintain stream flow records. This flow data, along with data published by various state agencies, usually can be found in libraries maintained by universities, by the state, or by various federal agencies.

Status of Facility Development

The progress and status of small hydroelectric projects are summarized in Tables 1 and 2. Out of 285 potential projects, 80 facilities--representing about 355 MW of the total installed capacity of 510 MW (70 percent)--have been completed, are under construction, or are in some other stage of development.

In addition to the FERC permit and license applications the number of sites being considered for development are also indicated by the number of U. S. Department of Energy (DOE) loan applications, and California Energy Commission (CEC) grant applications. Table 3 lists the applications for DOE licensing and feasibility loans, and Table 4 lists the feasibility studies co-funded by the CEC.

Table 1. Summary of the Status of Small Hydroelectric Projects at Existing Facilities

Status (January 1981)	Number of Facilities	Capacity (kW)	Energy (GWh/yr)
Construction Complete	8	31 200	162
Under Construction	5	34 600	223
FERC License or Exemption Issued	13	75 800	311
Applications Filed for FERC License or Exemption	4	19 530	69
FERC Preliminary Permits Issued	31	125 785	520
Applications Filed for FERC Preliminary Permits	19	68 555	295
TOTAL	80	355 470	1 580

Table 2. Detailed Analysis of the Status of Small Hydroelectric Projects at Existing Facilities

Owner/Project Name	Capacity (kW)	Energy (GWh/yr)	
CONSTRUCTION COMPLETE			Date completed
California Department of Water Resources			
Del Valle No. 1	5	0.04	10/80
The Metropolitan Water District of Southern California			
Foothill Feeder	9 100	61.3	10/80
Greg Avenue	1 000	4.5	6/80
Lake Mathews	4 900	18.6	8/80
Nevada Irrigation District			
Rollins Dam	12 000	60.0	6/80
Richvale Irrigation District			
Richvale Canal	100	0.3	8/80
Turlock Irrigation District			
Turlock Main Canal Drop No. 1	3 300	12.2	7/80
Turlock Main Canal Drop No. 9	1 100	4.7	10/79
TOTAL	31 200	161.6	
UNDER CONSTRUCTION			Scheduled completion date
Pacific Gas and Electric Company			
Volta No. 2 Powerhouse	1 000	5.0	1981
The Metropolitan Water District of Southern California			
San Dimas	9 900	68.2	2/81
Sepulveda Canyon	8 600	56.2	9/81
Venice	10 000	60.0	12/81
Yorba Linda Feeder	5 100	33.5	6/81
TOTAL	34 600	222.9	
FERC LICENSE OR EXEMPTION ISSUED			Date Issued
California Department of Water Resources			
Cottonwood No. 1	17 000	115.0	3/22/78
Thermalito Afterbay River Outlet	13 000	43.0	9/30/80
Merced Irrigation District			
Canal Creek	900	3.3	11/10/80
Escaladian Drop (Canal)	300	0.8	11/10/80
Fairfield Drop (Canal)	1 000	2.8	11/10/80
Richard B. Parker (on Main Canal)	2 800	9.2	8/18/80
Oroville-Wyandotte Irrigation District			
Sly Creek Dam	13 200	48.2	12/11/80
Sacramento Municipal Utility District			
Slab Creek	400	3.0	9/10/80

Table 2. Detailed Analysis of the Status of Small Hydroelectric Projects at Existing Facilities (Continued)

Owner/Project Name	Capacity (kW)	Energy (GWh/yr)	
FERC LICENSE OR EXEMPTION ISSUED (Continued)			Date Issued
South San Joaquin Irrigation District			
Frankenheimer Drop (Canal)	4 700	18.7	11/10/80
Woodward Dam	2 300	6.9	8/18/80
Turlock Irrigation District			
Turlock Main Canal Drop No. 6	200	0.8	1/02/81
Upper Dawson Project	4 000	15.9	11/10/80
U.S. Water and Power Resources Service			
Lake Berryessa (Montecello Dam)	16 000	43.0	1/29/81
TOTAL	75 800	310.6	
APPLICATIONS FILED FOR FERC LICENSE OR EXEMPTION			Scheduled completion date
California Department of Water Resources[1]			
Antelope Dam	450	1.4	3/85
Castaic Outlet	275	1.4	3/84
Cottonwood No. 2	12 000	90.0	7/88
Lake Davis (Grizzly Valley Dam)	500	1.5	1/85
Del Valle No. 2	400	1.1	7/85
Frenchman Dam	450	1.0	9/84
Las Flores Turnout	200	0.7	9/85
Mojave Siphon No. 1 (Silverwood Lake Inlet)	5 000	42.4	7/83
Mojave Siphon No. 2 (Silverwood Lake Inlet)	5 000	42.4	7/88
Palermo Outlet	400	2.0	1/84
Pyramid Outlet	1 000	4.0	7/84
Thermalito Diversion Dam	3 000	23.0	9/83
East Bay Municipal Utility District			
Camanche Dam	10 680	35.0	1983
Placer County Water Agency			
Hell Hole Dam	550	3.0	1982
Santa Barbara, City of			
Gibraltar Dam	1 500	4.0	—
South Sutter Water District			
Camp Far West Dam	6 800	26.9	—
TOTAL	19 530	68.9	

1/ Except for Cottonwood No. 2 and Mojave Siphon No. 1, applications for all Department's projects are scheduled to be filed by July 1981.

Table 2. Detailed Analysis of the Status of Small Hydroelectric Projects at Existing Facilities (Continued)

Owner/Project Name		Capacity (kW)	Energy (GWh/yr)	Date
FERC PRELIMINARY PERMITS ISSUED	Issued to			
Anderson-Cottonwood I.D.				
Lake Redding	City of Redding	14 000	50.0	3/19/79
Browns Valley Irrigation District				
Harding Canal	Owner	1 900	6.6	7/22/80
Merle Collins Reservoir (Virginia Ranch Dam)	Owner	600	5.6	7/22/80
Flat Water Ditch Company				
Saeltzer Dam	City of Redding	875	6.5	2/27/81
Humbolt Bay M.W.D.				
Ruth Reservoir (R.W. Matthews Dam)	Owner	4 000	14.2	1/16/81
Monterey County FC&WCD				
San Antonio Dam	Owner	6 000	26.0	6/21/79
Nevada Irrigation District				
Lake Combie	Owner	1 000	4.0	3/26/79
Oakdale and South San Joaquin I.D.				
Sand Bar Project	Owner	12 000	70.0	5/07/80
San Bernardino Valley MWD				
Lytle Creek Turnout	Owner	1 300	8.0	10/29/80
Santa Ana Low Turnout	Owner	1 400	4.0	10/29/80
Sweetwater Turnout	Owner	900	2.0	10/29/80
Waterman Canyon Turnout	Owner	4 000	7.0	10/29/80
Siskiyou County FC&WCD				
Lake Siskiyou (Box Canyon Dam)	Owner	4 000	20.0	1/01/79
Southern California Edison				
Paoha Project	Joseph M. Keating	500	1.0	11/14/80
U.S. Army Corps of Engineers				
Black Butte Dam	City of Santa Clara	5 000	25.0	10/14/80
Hensley Lake (Hidden Dam)	Madera Irrigation Dist.	1 300	4.0	9/10/80
H.V. Eastman Lake (Buchanan Dam)	Madera Irrigation Dist.	3 000	9.0	9/10/80
Lake Mendocino (Coyote Dam)	City of Ukiah	4 000	10.0	8/02/79
New Hogan Dam	Calaveras Co. W.D.	2 000	8.0	11/06/79
Success Dam	Lower Tule River Irrig. Dist.	4 000	12.0	9/04/80
U.S. Forest Service				
Hume Lake (Dam)	Lewis Evans	1 050	4.6	10/14/80
U.S. Water and Power Resources Services				
Boca Creek Dam	Truckee-Donner PUD	1 500	7.0	4/29/80
Folsom Lake Pipeline	San Juan Suburban Water Dist.	500	2.4	10/10/80

Table 2. Detailed Analysis of the Status of Small Hydroelectric Projects at Existing Facilities (Continued)

Owner/Project Name		Capacity (kW)	Energy (GWh/yr)	Date
FERC PRELIMINARY PERMITS ISSUED (Continued)	Issued to			
U.S. Water and Power Resources Services (Continued)				
Madera Canal				
Station 980+65	Madera Irrigation Dist.	1 750	5.5	9/04/80
Station 1064+67	Madera Irrigation Dist.	560	1.9	9/04/80
Station 1910+60	Madera Irrigation Dist.	650	2.6	9/04/80
Millerton Lake (Friant Dam)	Terra Bella Irrigation Dist.	23 000	100.0	5/15/80
Prosser Creek Dam	Truckee-Donner PUD	1 000	3.5	4/29/80
Red Bluff Diversion Dam	City of Redding	14 000	70.0	5/08/80
Stony Gorge Dam	City of Santa Clara	6 000	18.0	10/10/80
Whiskeytown Dam	City of Redding	4 000	12.5	3/25/80
TOTAL		125 785	520.9	
APPLICATIONS FILED for FERC PRELIMINARY PERMIT	Applicant			
City of Bakersfield and Kern Delta W.D.				
Beardsley Canal Headworks Structure	Owner	200	3.0	11/05/80
Beardsley Diversion Structure	Owner	800	0.8	11/05/80
Rocky Point Diversion (Carrier Canal Project)	Owner	660	2.5	11/05/80
Edward S. Cruz and William L. Beavers				
Cottonwood Canyon and Lone Tree Creek	Owner	800	3.7	1/14/81
George Costa				
Trinity Tunnel (Del Loma)	Hydro Development, Inc.	600	4.5	11/25/80
Oakdale and South San Joaquin I.D.				
Goodwin Dam	Owner	4 920	20.8	10/09/80
Pacific Gas and Electric Company				
Lake Pillsbury (Scott Dam)	City of Ukiah	5 000	15.0	12/15/80
Redding, City of				
Soeltzer Dam	Owner	875	6.5	10/29/80
U.S. Army Corps of Engineers				
Isabella Dam 1/	California Department of Water Resources	8 000	18.5	6/16/80
	Sequoia Energy Corporation	2 300	11.5	7/11/80
	North Kern Water Storage District	8 000	17.0	10/02/80

1/ Competing applications.

Table 2. Detailed Analysis of the Status of Small Hydroelectric Projects at Existing Facilities (Continued)

Owner/Project Name		Capacity (kW)	Energy (GWh/yr)	Date
APPLICATIONS FILED for FERC (Continued)				
PRELIMINARY PERMIT	Applicant			
U.S. Army Corps of Engineers (Continued)				
Lake Clementine[1] (North Fork Dam)	City of Redding	12 000	63.5	11/12/80
	City of McFarland and Western Renewable Resources, Inc.	11 000	60.0	7/17/80
	City of Santa Clara	12 000	60.0	2/23/81
Lake Kaweah (Terminus Dam)	Kaweah Delta Water Conservation District	9 500	30.2	1/08/81
Warm Springs Project[1]	City of Ukiah	3 000	15.0	5/27/80
	Sonoma County W.D.	3 000	15.0	8/25/80
U.S. Forest Service				
Lost Creek Project	Floyd N. Bidwell	1 800	10.0	12/15/80
United Water Conservation Dist.				
Lake Piru (Santa Felicia Dam)	Fluid Energy Systems	3 600	7.8	9/16/80
U.S. Water and Power Resources Service				
East Park Dam[1]	City of Santa Clara	900	2.2	9/29/80
	Orland Unit Water Users Association	1 600	4.0	1/08/81
New Siphon Drop[1] (Yuma Project)	Western Water Power, Inc.	1 400	11.3	10/03/80
	Enagenics	4 040	21.2	1/09/81
Palo Verde Diversion	Mitchell Energy Company	8 700	53.0	1/12/81
Sly Park Dam[1]	Continental Hydro Coorporation	570	2.1	12/09/80
	El Dorado Irrigation District	800	3.0	12/22/80
Stampede Dam[1]	American Hydroelectric Development Corporation	3 000	16.0	1/14/81
	Western Water Power, Inc.	1 800	13.2	1/06/81
Yolo County Flood Control and Water Conservation District				
Clear Lake Impounding Dam	Owner	2 000	7.5	1/27/81
TOTAL		68 555	294.8	

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[1] Competing applications.

Table 3. U. S. Department of Energy Feasibility and Licensing Loans

Application No.	Project	Owner/Operator	Date Rec'd
Feasibility Loans			
F09001[1/]	Fresno Main Canal	Fresno Irrigation District 1568 North Millbrook Ave. Fresno, CA 93703	8/31/79
F09002[1/]	New Hogan Dam	Calaveras County Water Department 427 East Street San Andreas, CA 95249	9/26/79
F09003[1/]	Jackson Meadows Bowman Dam	Nevada Irrigation District P. O. Box 1019 Grass Valley, CA 95945	10/09/79
F09004[1/]	Combie Dam	Nevada Irrigation District (see above)	10/09/79
F09005[1/]	Lake Siskiyou	Siskiyou County Flood Control Department 305 Butte Street Yreka, CA 96097	10/12/79
F09006[1/]	San Antonio Dam	Monterey County Flood Control Department P. O. Box 930 Salinas, CA 93902	10/25/79
F09007[1/]	Ruth Lake	Humboldt Bay Municipal Water District 828 Seventh Street Eureka, CA 95501	11/28/79
F09008	Semitropic Intake Canal	Semitropic Water Storage District 1340 F Street Wasco, CA 93280	1/12/80
F09009[1/]	Lyons Dam	Tuolumne County Water District No. 2 53 W. Bradford Sonora, CA 95370	1/25/80
F09010[2/]	Barrett Dam	City of San Diego 202 C Street San Diego, CA 92101	2/03/80

1/ Loan approved
2/ Loan rejected

Table 3. U.S. Department of Energy Feasibility and Licensing Loans (Continued)

Application No.	Project	Owner/Operator	Date Rec'd
F09011[2/]	Sutherland Dam	City of San Diego 202 C Street San Diego, CA 92101	2/03/80
F09012[1/]	Madera Canal	Madera Irrigation District 12152 Road 28 1/4 Madera, CA 93637	2/11/80
F09013[2/]	Hume Lake Dam	Lewis Evans P. O. Box 820 Kings Canyon National Park CA 93633	3/03/80
F09014[1/]	Virginia Ranch Dam	Browns Valley Irrigation District P. O. Box 6 Browns Valley, CA 95918	3/19/80
F09015[1/]	Hidden Dam	Madera Irrigation District (see above)	4/10/80
F09016[1/]	Buchanan Dam	Madera Irrigation District (see above)	4/25/80
F09017[1/]	Whitewater River	Culver Nichols 111 W. El Alameda P. O. Box 580 Palm Springs, CA 92262	5/08/80
F09018[1/]	Black Butte Dam	City of Santa Clara 1500 Warburton Ave. Santa Clara, CA 95050	5/12/80
F09019[1/]	Stony Gorge Dam	City of Santa Clara (see above)	5/21/80
F09023	Stumpy Meadows Reservoir	Georgetown Divide Public Utility District P. O. Box 338 Georgetown, CA 95634	9/29/80

[1/] Loan approved

[2/] Loan rejected

Table 3. U. S. Department of Energy Feasibility and Licensing Loans (Continued)

Application No.	Project	Owner/Operator	Date Rec'd
F09024	Carrier Power Project	City of Bakersfield 1501 Truxton Ave Bakersfield, CA 93301	11/25/80
F09025	Concow Project	Thermalito and Table Mountain Irrigation Districts 710 Grand Avenue Oroville, CA 95965	12/03/80
F09026	Scotts Flat Dam	Nevada Irrigation District P. O. Box 1019 Grass Valley, CA 95945	12/08/80
F09027	English Meadows Dam	Nevada Irrigation District (see above)	12/08/80
F09028	Lundy Reservoir	Joseph M. Keating Keating Associates 847 Pacific Street Placerville, CA 95667	12/18/80
Licensing Loans			
L09001[1]	Lake Mendocino	City of Ukiah 203 S. School Street Ukiah, CA 95982	11/02/79
L09002[1]	Friant Dam	Friant Power Authority Terra Bella Irrigation District 2479 Ave. 95 Terra Bella, CA 93270	11/30/79
L09003	New Hogan Dam	Calaveras County Water District 427 East St. Charles San Andreas, CA 95249	10/07/80
L09004	Lake Siskiyou	Siskiyou County Department of Public Works 305 Butte Street Yreka, CA 96097	10/21/80
L09005	Lake Combie	Nevada Irrigation District P. O. Box 1019 Grass Valley, CA 95945	12/08/80

1/ Loan approved
2/ Loan rejected

Table 4. California Energy Commission Feasibility Study Grants

Owner/Developer	Site
Amador County Water Agency	Central Amador Water Project
Calleguas Municipal Water District	Conejo Pump Station
Chowchilla Water District	Madera Canal Station 980+65 (WPRS)
El Dorado Irrigation District	Water Distribution System
El Segundo, City of	Pressure Reducing Station
Irvine Ranch Water District	Irvine Lake Pipeline (Rattlesnake Reservoir)
Lockheed Missiles & Space Co., Inc.	Big Creek Powerhouse Rehabilitation
North Tahoe Public Utility District	Griff Creek-Mt. Baldy Springs Project
Orange Cove Irrigation District	Sand Creek Check
Paradise Irrigation District	Paradise Reservoir
Redlands, City of	Highland Avenue Pumping Plant Redlands Water Treatment Plant
San Bernardino Valley Municipal Water District	Santa Ana Low Turnout Sweetwater Turnout
San Diego County Water Authority	Treatment Plants & Tunnel
San Gabriel Valley MWD	Devil Canyon-Azusa Pipeline
San Juan Suburban Water District	Treatment Plant to Distribution System
Truckee-Donner Public Utility District	Boca Dam (WPRS) Prosser Creek Dam (WPRS)
Whitewater Canyon Mutual Water Co.	Whitewater Canyon Irrigation System

Antelope Dam, on Indian Creek in Plumas County, is owned by the California Department of Water Resources. A 450-kilowatt hydroelectric power plant at this site could generate 1.4 million kilowatthours of electricity annually. This amount of energy is equivalent to burning 2,400 barrels of oil in a fossil-fuel plant. (DWR photo 3759-7)

CHAPTER II

THE PURCHASE OF SMALL HYDROELECTRIC POWER BY UTILITIES

Historically, a producer of small hydroelectric power wishing to market the energy produced, faced three major obstacles. Utilities were often unwilling to purchase the energy or to pay a reasonable price. Secondly, some utilities charged unreasonably high rates for providing back-up or standby service to customers who produced and used some of their own power. Often, these utilities also heavily discounted the value of such generation when calculating dependable capacity and reserves, and charged high wheeling (transmission) costs. Lastly, a small power producer who sold generation to a utility also ran the risk of being classified as an electric utility and thus becoming subject to state and federal regulation.

Until very recently, these obstacles discouraged the development of new small hydroelectric power facilities. Now, electric utilities are required to purchase the generation from small hydroelectric projects at a price equal to the costs that the utilities would incur producing the power themselves, or purchasing this amount of energy from other sources. A developer can, of course, use the energy generated for his own purposes without penalty.

Pertinent Legislation

The Public Utility Regulatory Policies Act of 1978 (PURPA) significantly changed the method for determining the value of energy generated by small power production facilities and cogeneration facilities, and also changed the requirements for electric interconnection and the wheeling of power produced by such facilities. The sections of PURPA which are particularly pertinent to small hydroelectric projects are Sec. 201, which defines a qualifying facility; Sec. 210, which defines the rates at which a qualifying facility can sell its energy; and Title IV, which provides loans for conducting feasibility studies and for licensing.

The impact of PURPA on the development of small hydroelectric generation is only now beginning to be felt. The Federal Energy Regulatory Commission (FERC) is in the process of establishing requirements and procedures that will filter down to the utilities and state regulatory agencies.

California is ahead of most other states in implementing some of the policies established by PURPA. The California Public Utilities Commission (CPUC) investigated Pacific Gas and Electric Company's (PGandE) resource plan and its alternative plans, their ratemaking implications, and the options available with each plan (CPUC Order Instituting Investigation No. 26, OII-26). The CPUC ordered PGandE to publish cogeneration rates based on its avoided cost and authorized the utility to purchase power from cogeneration facilities at those rates (CPUC Decision 91109, December 19, 1979).. On February 4, 1980, PGandE announced that it would purchase energy from cogenerators and small power producers. The CPUC also extended the avoided-cost principle of Decision 91109 to the other CPUC-regulated electric utilities in California (CPUC Resolution E-1872, March 4, 1980).

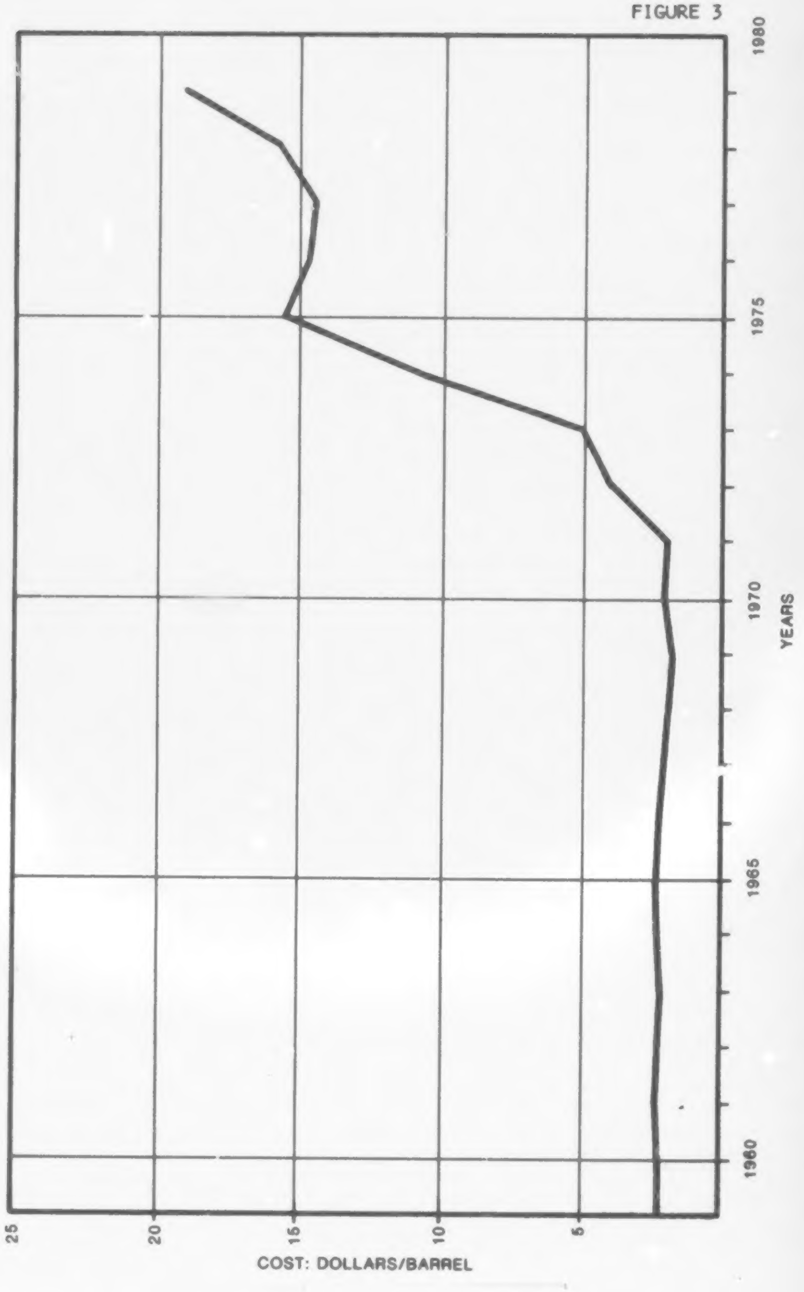


Figure 3. Cost of Oil-Fired Generation at PG&E's Most Efficient Steam Plants

These include Southern California Edison (SCE), San Diego Gas and Electric (SDG&E), Pacific Power and Light (PP&L), Sierra Pacific Power, and CP National.

All of these electric utilities were directed to publish interim offers to buy electricity from cogenerators and small power producers pending the completion of CPUC rulemaking in compliance with PURPA. Standard price offers specific to small hydroelectric facilities (under 100 kW and over 100 kW) have been developed by PGandE; SCE, SDG&E, CP National, PP&L, and Sierra Pacific Power have developed similar price offers applicable to small hydroelectric power producers. The purchase of electricity from small hydroelectric producers by these utilities will be based on these price offers pending final implementation of PURPA by the CPUC.

The CPUC instituted a generic proceeding (OIR-2) to implement PURPA. This order will establish standards governing the prices, terms, and conditions of the utilities' purchases of electric power from cogeneration and small power production facilities. Owners or developers of qualifying facilities (QF) can accept the standard offers now available or can negotiate an agreement with the utilities on some other basis. In addition, the CPUC requested utilities to vigorously pursue making agreements with small power producers. To facilitate this activity, while OIR-2 is in progress, the CPUC staff is encouraging utilities and the owners or developers of QFs to agree to modify their contracts to conform with any standards adopted in OIR-2. Summaries of the power-purchase agreements for PGandE, SCE, and SDG&E are included in Appendix G.

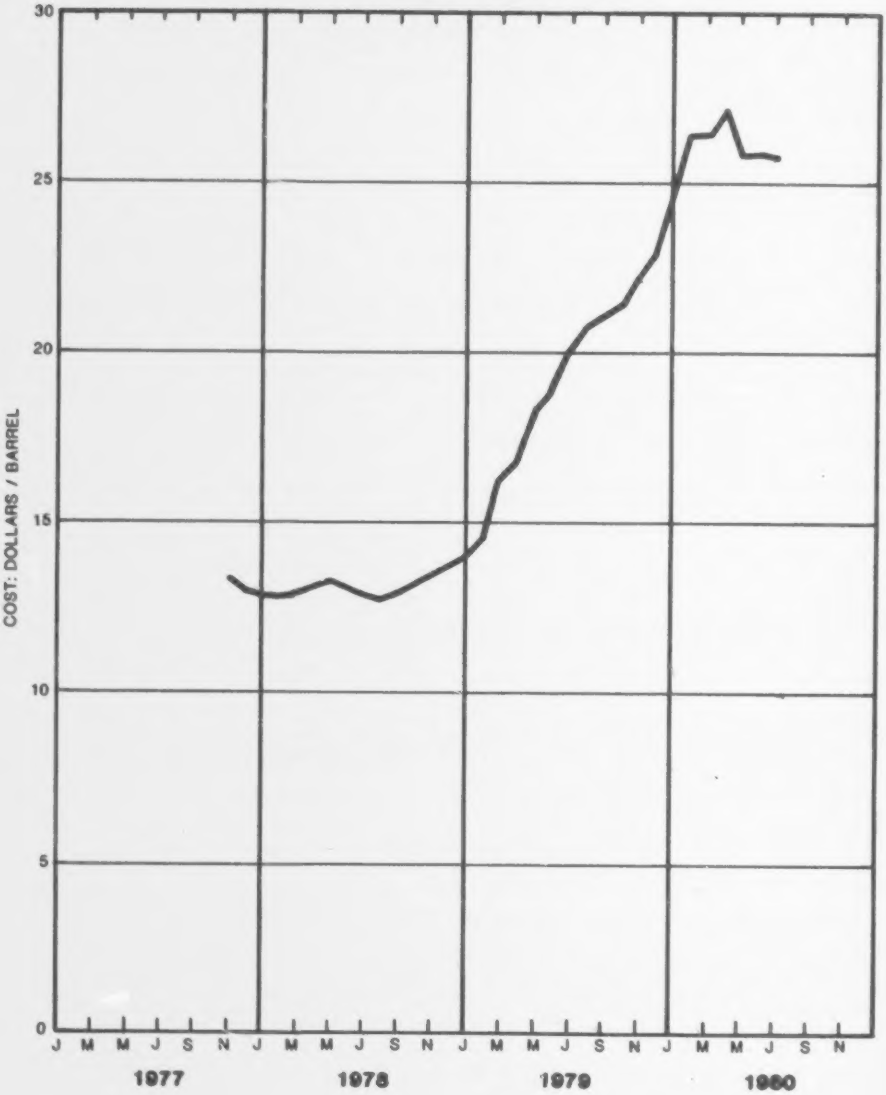
Cost of Alternative Generation

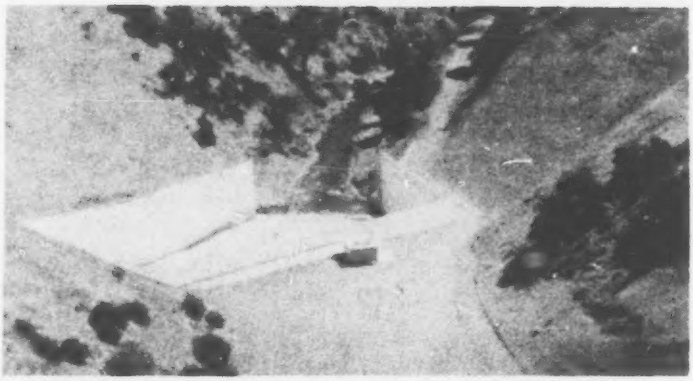
According to Section 210 of PURPA and the standard set forth by CPUC Decision 91109, the alternative generation from a small hydroelectric project can cost no more than the energy a utility would have to generate itself or purchase from another source. Since the utility can "avoid" producing this power by purchasing it, its cost is called the "avoided cos ". The avoided-cost standard encourages the development of renewable resources, such as biomass, wood waste, refuse, and falling water, thus reducing our dependence on foreign oil. In California, and elsewhere, small hydroelectric projects will produce electrical energy that would otherwise be produced by oil-fired generating facilities. Thus, the avoided cost of energy will be related directly to the current and future cost of fossil fuel, primarily oil.

Historical Costs of Energy. The cost of oil has increased dramatically from about $2 a barrel in the 1960s to about $26 by mid-1980. The average cost of oil burned to produce electricity at PGandE's six most-efficient steam-electric power plants from 1959 through 1979 is shown in Figure 3. The cost of electrical energy produced by these oil-fired steam plants has increased from about 0.4 cents per kWh in the early 1960s to 3 cents per kWh in 1979.

Because of the rapidly rising price of crude oil and the time lag between purchase and actual use of this oil to generate electricity, the average annual cost may be misleadingly low. Thus, while the average cost of oil for electricity generation at PGandE's power plants during 1979 was

Figure 4 Cost of Oil Burned for Electric Generation
Middletown Station - Hartford Electric Lighting Company
Hartford, Connecticut





Indian Valley Dam, on a tributary of Cache Creek in Lake County, is owned by the Yolo County Flood Control and Water Conservation District. A 3 200-kilowatt hydroelectric power plant at this site could generate 7.2 million kilowatthours of electricity per year. This amount of energy would supply the annual electrical residential needs of 3,400 people.
(Photo by DWR Energy Division)

calculated to be about $18.20 per barrel, the actual cost during the last quarter of 1979 was about $21.50 per barrel.[1]

The world market price for oil has increased even more during the first half of 1980. In the second quarter of 1980, Saudi Arabia increased its oil price from $26 to $28 per barrel. Although other oil-producing countries charge even more, the Saudi Arabian price generally reflects the average cost of all oil burned in the United States to produce electrical energy. The increase to $28 per barrel will be partially reflected in the 1980 cost of electrical energy, and fully reflected in the 1981 average cost. The actual cost of oil burned to generate electricity at a cycling steam-electric plant in the northeastern United States is comparable to the cost of oil used in California (Figure 4).

Projected Energy Costs. Reasonable estimates of the future prices for oil must be obtained in order to calculate the benefits or losses of capital investment in small hydroelectric facilities. The future prices of energy have been estimated in this report using figures supplied by the California Energy Commission (CEC) and other knowledgeable sources.

The CEC is conducting a continuing investigation into the cost and supply of fuels. In a comprehensive report, discussing supply availability and the projected costs of fuels,[2] the CEC staff stated, "Continuing

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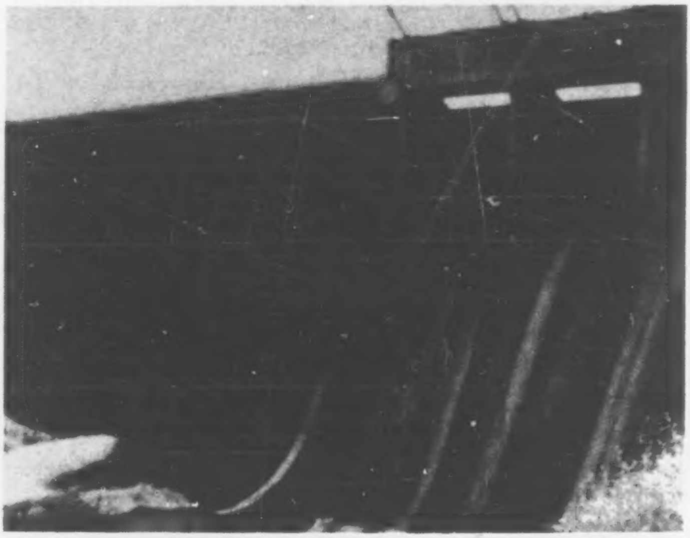
1/ Estimated from energy rates developed by PGandE as a result of CPUC Decision 91109.

2/ Staff Draft Report. "Fuel Price and Supply Projections 1980-2000," California Energy Commission Publ. P102-79-014. November 1979.

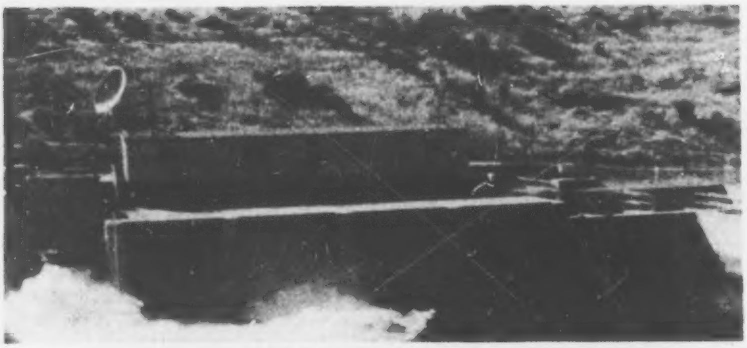
international chaos indicates that any lessons to be learned from historic trends can be rapidly overshadowed by geopolitical shifts and [an] essentially complete disregard for free market forces. As the price and supply of oil to California [are] is shaped much more by world forces than by any internal dynamic[s] of supply and demand, the task of predicting our future oil availability/price is extremely difficult."

Although California is the fourth largest producer of oil and gas in the United States, about two-thirds of the State's energy supplies are imported.

The CEC report predicts substantial increases in the price of oil, because it is much less costly to increase oil- producing capacity in Saudi Arabia than to produce heavy crude oil in Venezuela or oil shale in Colorado. The average production cost in Saudi Arabia is probably less than $2 per barrel, while new Venezuelan oil would cost about $15 per barrel to produce; alternative fuels derived from coal would cost about $30 to $35 per equivalent barrel of oil (in 1979 dollars). Thus, Middle Eastern producers would probably maintain price levels low enough to preclude stimulating the development of alternative sources oil production or of alternative fuels.



Stony Gorge Dam, on Stony Creek in Glenn County, is owned by the U. S. Water and Power Resources Service. A 6 000-kilowatt hydroelectric power plant at this site could generate 18 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 30,700 barrels of oil in a fossil-fuel power plant.
(Photo by DWR Northern District, Red Bluff)



Camanche Dam, on the Mokelumne River in San Joaquin County, is owned by the East Bay Municipal Utility District. A 10,680-kilowatt hydroelectric power plant at this site could generate 35 million kilowatthours of electricity annually. This amount of energy is equivalent to burning 59,700 barrels of oil in a fossil-fuel power plant.
(East Bay Municipal Utility District Photo)

The CEC's most likely scenario in projecting the future cost of oil assumes that oil producers will continue to demand large price increases over the near term, and that new oil production and alternative derived fuels will only be developed at a moderate pace. The CEC's projected prices for oil and the projected annual escalation rates for these prices are shown in Tables 5 and 6, respectively.

Table 5. CEC's Projected Prices of Oil (1979 Dollars per Barrel)

Type of Oil	Year			
	1980	1985	1990	2000
Crude Oil	20.00	27.50	31.80	37.70
Distillate	25.58	38.00	43.85	51.56
Residual Oil (0.5% Sulfur)	22.87	35.82	42.00	49.67

Table 6. Annual Escalation Rates of Oil Prices (Percentage)

Type of Oil	Years		
	1981-85	1986-90	1990-2000
Crude Oil	6.6	3.0	1.7
Distillate	8.2	3.0	1.9
Residual Oil (0.5% Sulfur)	9.4	3.2	1.7

In order to assess the feasibility of a small hydroelectric project, the value of the energy generated during the early years of the project's operation must be determined. The economic benefits achieved during its first year of operation will likely increase in subsequent years due to increasing energy prices. Since the CEC's price projections were given in 1979 dollars. it is necessary to escalate those projections to reflect future inflated dollars. Estimates of general inflation rates are needed to determine these future oil prices, but projections of general inflation rates for future years are difficult to make.

It is logical to predict that the world price of oil will escalate as rapidly as the world economy can withstand it, until the price of oil approaches (but does not reach) the cost of producing synthetic fuels from coal, tar sands, and oil shale. If that level were reached, the price of oil would have to be competitive with that of alternative fuels.

Assuming that the world economy--and the American economy in particular--can withstand an annual inflation rate of about 12 percent, it is only a matter of time until synthetic fuels and solar energy must be developed. If the development of synthetic fuels and solar energy were ignored, the United States would have to pay a premium price for energy, and thereby, would become noncompetitive in the world market.

Given that synthetic fuels and solar electrical generation will be developed within five years, the logical scenario would show annual inflation rates of 15 percent in 1980, 12 percent in 1981 through 1985, 8 percent in 1986 through 1990, and 6 percent thereafter. Based on this and using the CEC median-price projections for basline data, the estimated price of oil in future dollars is shown in Table 7.

Table 7. Estimated Price of Oil (Future Dollars per Barrel)

Type of Oil	Year 1980	 1985	 1990	 2000
Crude	23	54	94	193
Distillate	29	73	124	266
Residual Oil (0.5% Sulfur)	26	69	117	247

Residual Fuel Oil containing 0.5% sulfur is burned by PGandE to produce electrical energy. The projected 15 percent price increase 1980 would result in a 1980 cost of about $26 per barrel to PGandE. This is consistent with CECs projection and with the $26 price established by Saudi Arabia in mid-1980.

Estimated Payments for Hydroelectric Generation

The estimated payments for hydroelectric generation to be made by PGandE, SCE, and SDG&E are shown in Tables 8 and 9. The projections are based on estimated inflation and escalation rates, and the rates of proposed payments made by the utilities for hydroelectric generation in 1980. Since the payments for hydroelectric generation are based on the avoided cost of oil, the estimated price of oil is also shown in these tables. The historical and projected costs of oil burned by PGandE to produce electrical energy are shown in Figure 5.

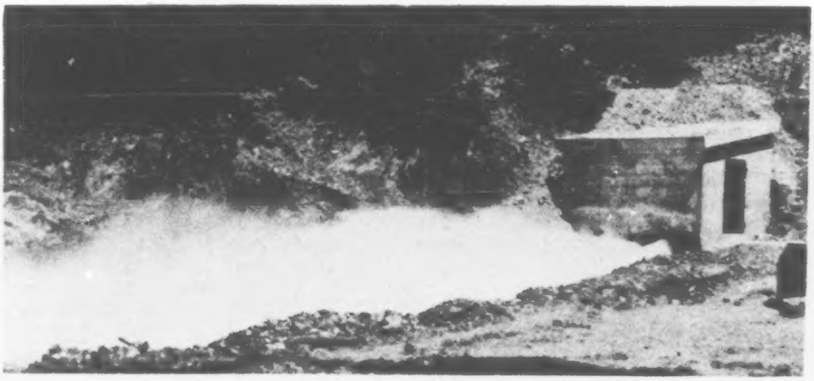
Table 8. Projected Energy Rates for Sale of Small Hydroelectric Generation

Year	Oil Price Escalation Rate (%)[1]	Inflation Rate (%)	Price of Oil ($/bbl)	Energy Rate (¢/kWh)		
				PGandE	SCE	SDG&E
1980	-	15	26	5.1	4.6	5.4
1981	9.4	12	31	6.2	5.6	6.6
1982	9.4	12	38	7.5	6.8	8.0
1983	9.4	12	47	9.1	8.3	9.7
1984	9.4	12	57	11.1	10.1	11.7
1985	9.4	12	69	13.4	12.2	14.2
1986	3.2	8	77	15.0	13.6	15.8
1987	3.2	8	85	16.6	15.1	17.6
1988	3.2	8	95	18.5	16.8	19.6
1989	3.2	8	106	20.6	18.7	21.8
1990	3.2	8	117	22.9	20.8	24.2
1991	1.7	6	127	24.6	22.4	26.1
1992	1.7	6	136	26.5	24.1	28.1
1993	1.7	6	147	28.6	26.0	20.2
1994	1.7	6	158	30.8	28.0	32.6
1995	1.7	6	170	33.1	30.1	35.1
1996	1.7	6	184	35.7	32.5	37.8
1997	1.7	6	198	38.4	35.0	40.7
1998	1.7	6	213	41.4	37.7	43.8
1999	1.7	6	229	44.6	40.6	47.2
2000	1.7	6	247	48.0	43.7	50.8

1/California Energy Commission's Median Projection

Table 9. Capacity Payment Rates, by Utilities ($/kilowatt-year) Effective February 4, 1980.

Year of Initial Operation		Term of Sales (yrs)						
		1	5	10	15	20	25	30
	PGandE	-	56	62	68	73	-	81
1980	SCE	-	29	54	70	82	-	102
	SDG&E	-	-	16	27	35	40	-
	PGandE	-	60	66	72	77	-	85
1981	SCE	-	39	64	79	93	-	114
	SDG&E	-	-	22	34	43	48	-
	PGandE	-	63	69	75	81	-	89
1982	SCE	30	51	75	90	104	-	127
	SDG&E	-	8	30	43	52	59	-
	PGandE	60	66	73	79	85	-	94
1983	SCE	32	65	87	103	118	-	143
	SDG&E	-	18	41	54	64	71	-
	PGandE	63	69	76	83	89	-	98
1984	SCE	35	82	102	117	133	-	159
	SDG&E	-	30	53	67	78	86	-
	PGandE	66	73	80	87	93	-	103
1985	SCE	-	101	118	134	151	-	180
	SDG&E	-	45	68	83	95	104	-



Scotts Flat Dam, on Deer Creek in Nevada County, is owned by the Nevada Irrigation District. A 1 300-kilowatt hydroelectric power plant at this site could generate 5.5 million kilowatthours of electricity annually. This amount of energy would supply the annual electrical residential needs of 2,600 people.
(Photo by DWR Division of Safety of Dams)

FIGURE 5

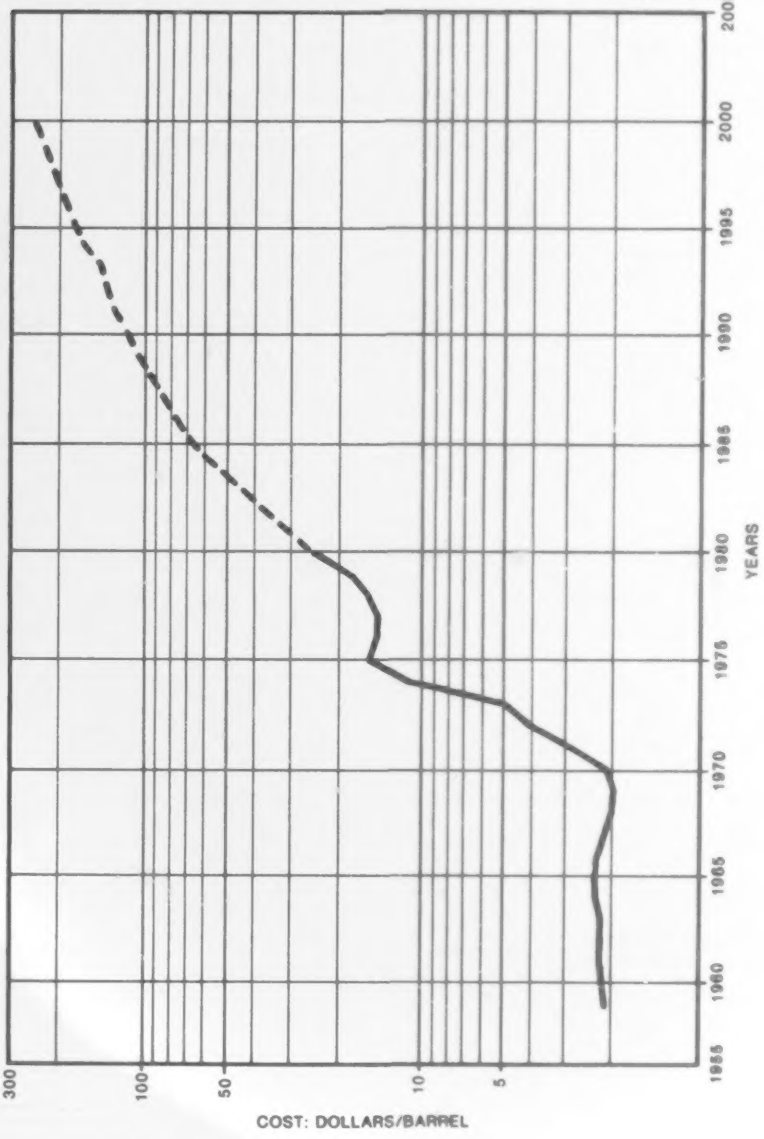
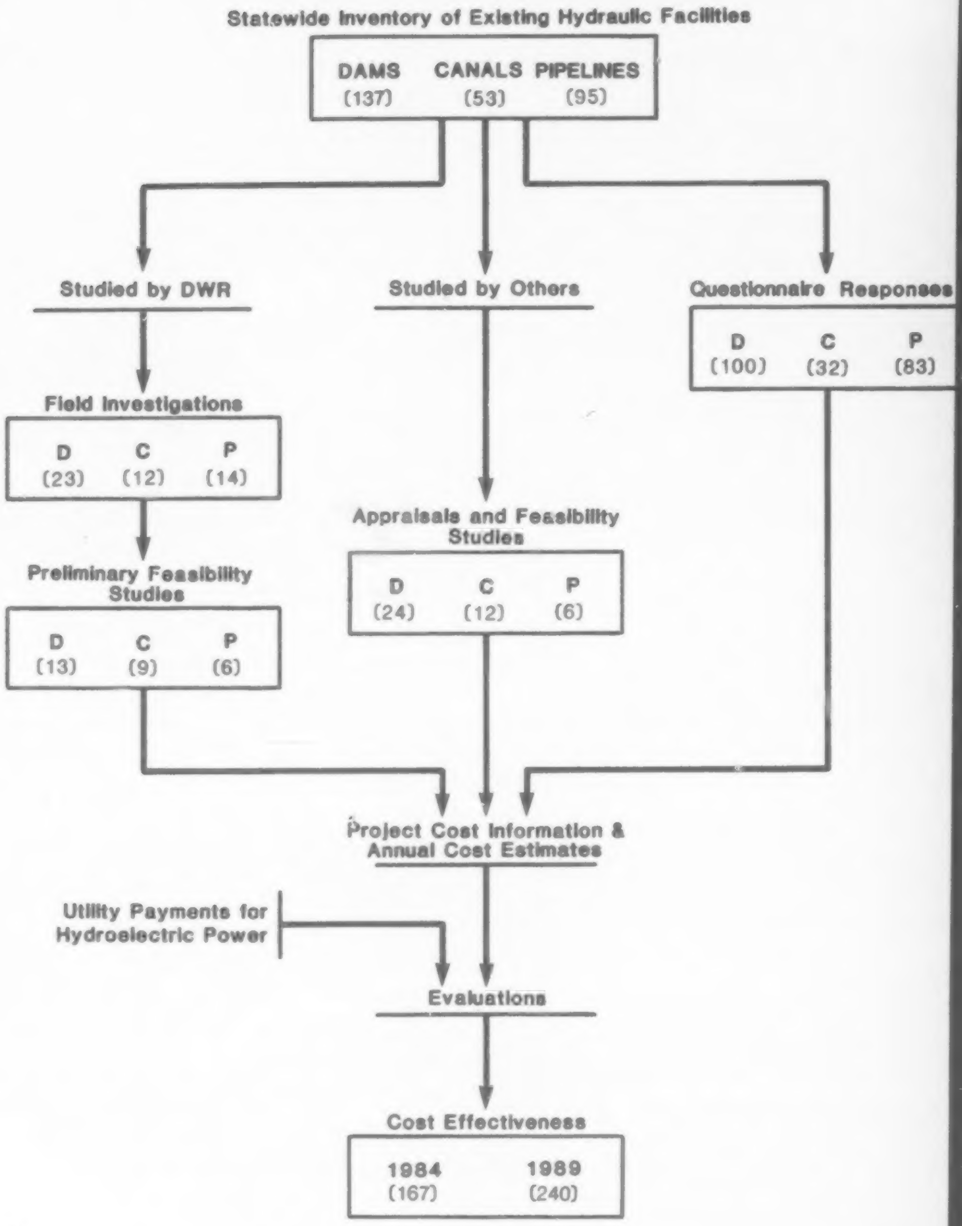


Figure 5 Historical and Projected Average Cost of Oil for Electrical Generation at PG&E's Most Efficient Steam Electric Plants

Figure 6 Selection and Evaluation Flow Chart


Statewide Inventory of Existing Hydraulic Facilities
DAMS (137)
CANALS (53)
PIPELINES (95)
Studied by DWR
Studied by Others
Questionnaire Responses
D (100) C (32) P (83)
Field Investigations
D (23) C (12) P (14)
Appraisals and Feasibility Studies
D (24) C (12) P (6)
Preliminary Feasibility Studies
D (13) C (9) P (6)
Project Cost Information & Annual Cost Estimates
Utility Payments for Hydroelectric Power
Evaluations
Cost Effectiveness
1984 (167)
1989 (240)

CHAPTER III

SELECTION AND EVALUATION

Hydraulic structures where hydroelectric facilities might be installed were identified through information obtained from (a) questionnaires distributed by the Department, (b) the U.S. Army Corps of Engineers' National Hydroelectric Power Study, (c) local water agencies and districts, and (d) the state's electric utilities. The Department identified 285 sites which had a potential for small hydroelectric development. These sites represented 510 000 kW of capacity and an annual output of 2.4 billion kWh of energy. The methodology for evaluating the cost effectiveness of each of the 285 sites is outlined in the Selection and Evaluation Flow Chart (Figure 6).

Selection

The facilities were divided into three groups based on the type of hydraulic structure: dam, canal, or pipeline. Each group was further divided into those facilities with installed capacities of 500 kW or greater and those with less than 500 kW of capacity. This was important for determining cost effectiveness since the cost of building a small power plant increases rapidly--on a dollar-per-kilowatt basis--as the installed capacity decreases below 500 kW.

Since time and money were limited, it was impossible to study each of the 285 facilities first hand. The evaluations made in this study were based on three types of information: data from preliminary feasibility studies conducted by the Department at 28 representative sites; data from

Ruth Reservoir (Robert W. Matthews Dam), on the Mad River in Trinity County, is owned by the Humboldt Bay Municipal Water District. A 1 600-kilowatt hydroelectric power plant at this site could generate 8.3 million kilowatthours of electricity per year. This is equivalent to burning 14,200 barrels of oil in a fossil-fuel power plant. (Photo by DWR Division of Safety of Dams) feasibility or appraisal studies conducted by others at 42 additional sites; and data on the head and flow at 215 remaining sites as obtained in response to the Department's questionnaries.

The Department conducted its studies in two phases consisting of field investigations and preliminary feasibility studies. Forty-nine sites were selected for initial field investigations. These sites represented the types of hydraulic structures found in California and contained examples from each of the six categories. The 49 facilities are listed in Table 10.

Table 10. Field Investigations Conducted by the Department of Water Resources

Site		Owner
1.	Anderson Flume Diversion[1/]	Anderson-Cottonwood Irrigation District
2.	Parkview Station[1/]	Anderson-Cottonwood Irrigation District
3.	Harding Canal[1/]	Browns Valley Irrigation District
4.	Merle Collins Reservoir[1/] (Virginia Ranch Dam)	Browns Valley Irrigation District
5.	Frenchman Dam[1/]	California Department of Water Resources
6.	Beardsley Diversion[1/]	City of Bakersfield, et al.
7.	Rocky Point Diversion[1/]	City of Bakersfield, et al.
8.	Glendale Distribution[1/]	City of Glendale
9.	Alvarado Treatment Plant	City of San Diego
10.	Miramar Treatment Plant	City of San Diego
11.	Moccasin Reregulating Dam	City and County of San Francisco
12	Mount Olivette[1/]	City of Santa Monica
13.	Chowchilla Main Canal	Chowchilla Water District
14.	Fresno Main Canal	Fresno Irrigation District
15.	Gould Weir Diversion Dam[1/]	Fresno Irrigation District
16.	Del Loma Tunnel[1/]	George Costa
17.	Buckeye Conduit[1/]	Georgetown Divide Public Utility District
18.	Stumpy Meadows Reservoir[1/] (Mark Edson Dam)	Georgetown Divide Public Utility District
19.	Ruth Reservoir (Robert W. Matthews Dam)	Humboldt Bay Municipal Water District
20.	Alamo Drop 3A[1/]	Imperial Irrigation District
21.	No. 8 Heading[1/]	Imperial Irrigation District
22.	Tuberose Check	Imperial Irrigation District
23.	Vail Heading[1/]	Imperial Irrigation District
24.	Lake Amador[1/] (Jackson Creek Dam)	Jackson Valley Irrigation District
25.	Pacoima Dam	Los Angeles County Flood Control District
26.	San Gabriel Dam	Los Angeles County Flood Control District
27.	West Coast Basin Barrier[1/]	Los Angeles County Flood Control District

Table 10. Field Investigations Conducted by the Department of Water Resources (Continued)

Site	Owner
28. Eastside Pipeline	Lost Hills Water District
29. Lake Shastina[1] (Shasta River Dam)	Montague Water Conservation District
30. Pumping Plant Lower[1]	Montague Water Conservation District
31. Picay Pressure Break	Montecito County Water District
32. Lyons Dam	Pacific Gas and Electric Company
33. San Vicente Reservoir (Pipeline)	San Diego County Water Authority
34. Sidney N. Peterson Treatment Plant	San Juan Suburban Water District
35. Chesbro Dam[1]	South Santa Clara Valley Water Conservation District
36. Uvas Dam[1]	South Santa Clara Valley Water Conservation District
37. Black Butte Dam[1]	U. S. Army Corps of Engineers
38. Hensley Lake (Hidden Dam)	U. S. Army Corps of Engineers
39. H.V. Eastman Lake (Buchanan Dam)	U. S. Army Corps of Engineers
40. Lake Kaweah (Terminus Dam)	U. S. Army Corps of Engineers
41. Lemoncove Ditch[1] (At Terminus Dam)	U. S. Army Corps of Engineers
42. New Hogan Dam	U. S. Army Corps of Engineers
43. All-American Canal Drop No. 5	U. S. Water and Power Resources Service
44. Jenkinson Lake[1] (Sly Park Dam)	U. S. Water and Power Resources Service
45. North Portal Tecolote[1] Intake	Cachuma Operation and Maintenance Board
46. Stampede Dam	U. S. Water and Power Resources Service
47. Sonoma Reservoir	Valley of the Moon County Water District
48. Clear Lake Impounding[1]	Yolo County Flood Control and Water Conservation District
49. Indian Valley Dam[1]	Yolo County Flood Control and Water Conservation District

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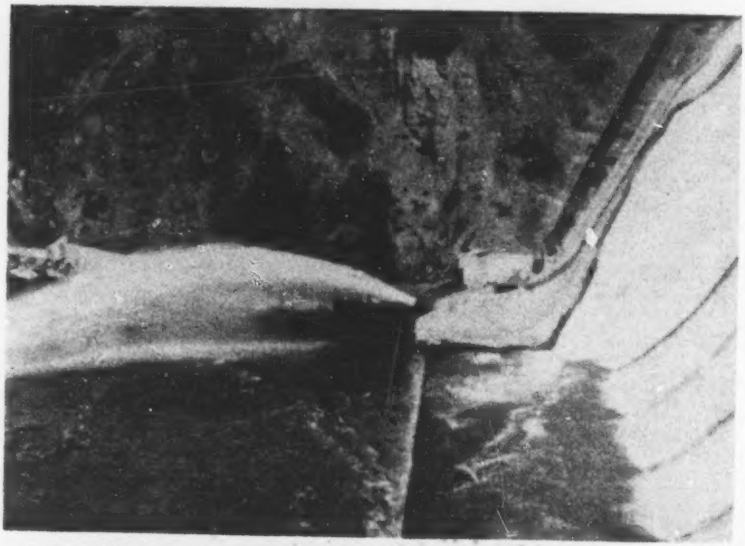
[1] Included in the 28 representative sites whose preliminary feasibility studies are presented in Appendix C.

Field Investigations

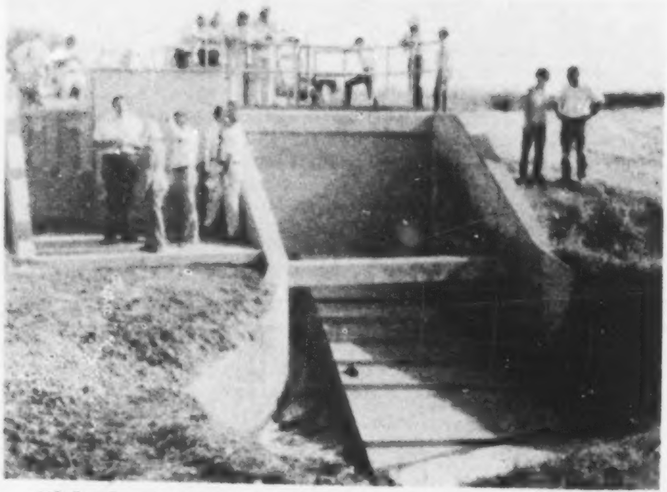
An on-site field study of each site was conducted to determine which sites were suitable for preliminary feasibility studies. During these inspections, the physical characteristics of the site were noted, including the amounts of head and flow, types of conduits and construction materials, the presence of canals and other adjoining waterways, and the characteristics of gates, valves, and energy dissipaters. The historical operational procedures and the primary purpose of the existing facility were also considered. A record of past flows and releases was obtained for use in computing the potential energy output. Each study is discussed briefly in Appendix B.

Some potential sites were unsuitable or impractical for development for various technical reasons. These included sites with (1) little or no effective head; (2) an inadequate combination of head and flow; (3) an adequate flow of limited duration; (4) concrete conduits that cannot be pressurized for use as penstocks; (5) a current use that is incompatible with hydroelectric generation; (6) serious environmental problems including those associated with development on a wild or scenic river or within a wilderness area; (7) a need for long transmission lines; or (8) hydraulic structures that are simply in poor physical condition.



Lake Pillsbury (Scott Dam), on the Eel River in Lake County, is owned by the Pacific Gas and Electric Company. A 2 800-kilowatt hydroelectric power plant at t[illegible] site could generate 10 million kilowatthours of elect[illegible]ty per year. This amount of energy would supply the annual electrical residential needs of 3,400 people.

(Photo by DWR Energy Division)



Richvale Canal Powerplant, on the Richvale Canal in Butte County, is owned by the Richvale Irrigation District. This 100-kilowatt hydroelectric power plant, constructed in 1980, generates 0.4 million kilowatthours of electricity annually. This amount of energy will supply the annual electrical residential needs of 190 persons.
(Photo by DWR Energy Division)

Feasibility Studies

If the on-site inspection showed a power project to be technically feasible, economic feasibility and cost effectiveness could then be assessed on the basis of known site-specific characteristics. Of the 49 representative sites, projects at 28 of the sites were found to be technically feasible. These sites were then subjected to preliminary feasibility studies which used uniform methods to evaluate the physical layout, to estimate the necessary construction costs, and to provide a common base on which to develop guidelines for assessing other potential sites.

Guidelines

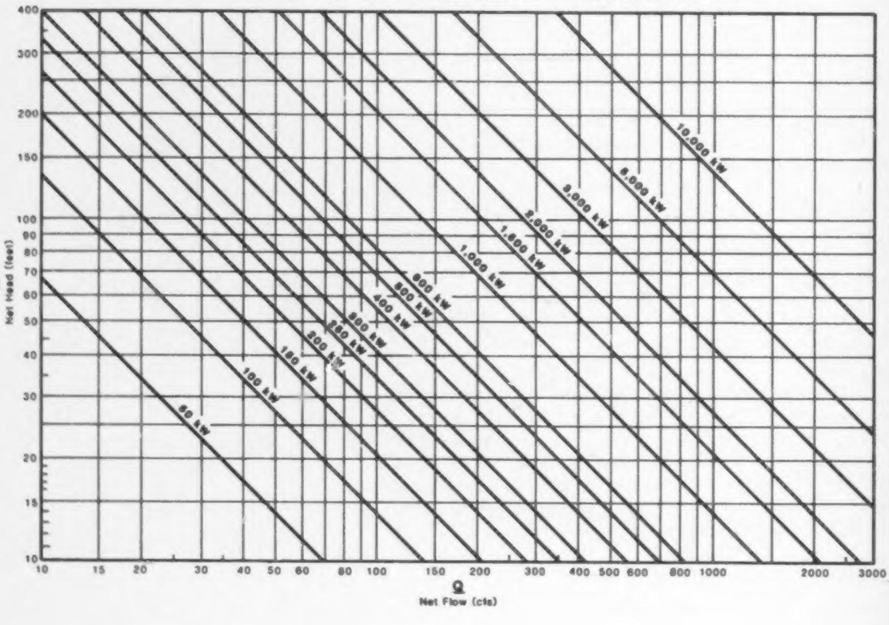
Each hydroelectric project is distinct, since few sites have the same combinations of head and flow or the same physical features. The most efficient turbine-generator design is one engineered specifically for the head and flow conditions of a particular site. The foundation, structures, and waterways must also be designed individually. If studies of specific hydroelectric sites are extrapolated to other sites which have unknown local conditions, a degree of error will be built-in to the evaluation.

Guidelines derived from a sampling of feasibility studies can be used to make a general assessment of other sites where the head and approximate annual flows are known. The guidelines based on the calculated cost effectiveness of the 28 representative sites studied by the Department were extrapolated to the 257 other sites. The parameters used included (1) Design capacity, as determined by the head and flow; (2) Annual energy generation, as determined from head and water available for power production; (3) Capacity factor; (4) Estimated project cost; (5) Estimated annual cost of ownership and operation; and (6) Payments by utilities for hydroelectric generation.

Design Capacity. The design capacity of a site is established by the physical features of the head and the flow of water. The design head is the net head after subtracting losses due to friction developed as the water flows to the turbine. However, since the known heads and flows at many potential sites are only approximations, the design head must be the estimated available head. The design flow, usually expressed in cubic feet per second (cfs) during a specific period of time such as a month, should be an average of more than three or four months.

The estimated capacity of the unknown site (C, in kilowatts), is the product of head (H, in feet) and flow (F, in cubic feet per second) divided by a factor that represents the efficiency of the equipment and the efficiency of converting the energy of falling water into electric power; for estimating purposes, an efficiency factor of 14 can be used. This results in the equation: $C = F \times H/14$ or $kW = cfs \times ft/14$. A graph of head and flow data can be used to estimate the design capacity of a site (Figure 7).

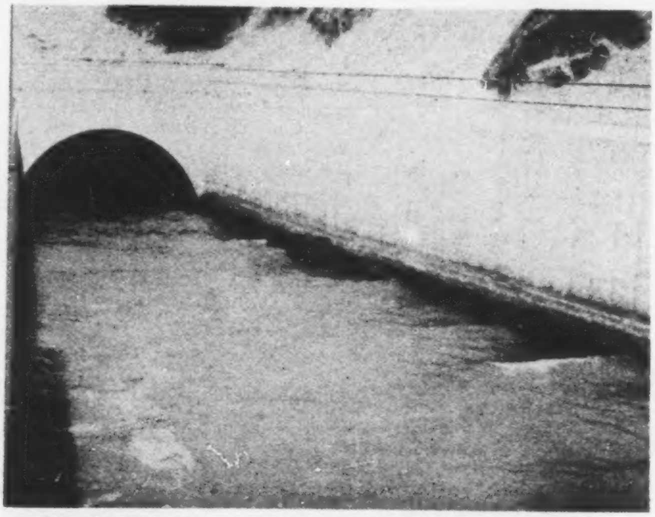
Figure 7 Power Developed at Various Combinations of Head and Flow



Project Cost. Among other things, the cost of constructing a hydroelectric project depends on local physical and geological features, and the length and size of the transmission lines required. The estimated cost of a particular facility is also affected by the design capacity. The estimated project costs for the 28 representative sites are shown in Figure 8 and are discussed in detail in Appendix C.

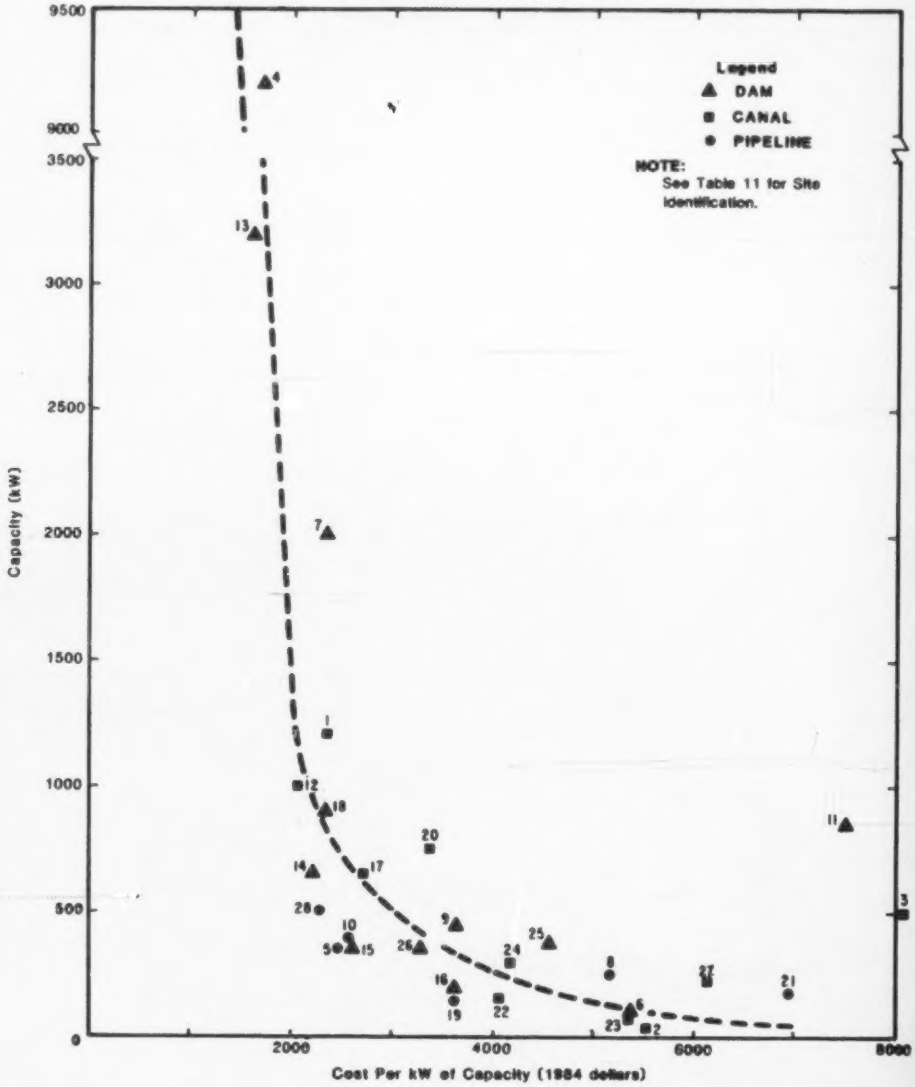
In the range of 50 kW to 3200 kW of installed capacity, project costs vary from $1,700 to $6,000 per kW. Since the costs were estimated in 1980 dollars for projects to be operational in 1984, these costs are escalated at 12 percent per year from January 1980 to obtain the January 1984 prices. The estimated costs include all direct costs such as studies, licensing, permits, and approvals, but do not include the indirect costs of financing and of interest during construction. Since the cost of interest during construction will vary depending on the interest rate charged on the funds which are available to the site developer, it has been included in the fixed annual cost of owning and operating the project.

The cost of constructing a project (in dollars per kW of installed capacity) increases rapidly for projects having capacities below 1000 kW. The estimated project cost ranges from $2,200 to $3,500 per kW for projects with capacities of 400 kW to 500 kW. From 200 kW to 400 kW, the cost increases to $3,500 to $4,500 per kW; and for projects of less than 200 kW, the project cost can be expected to exceed $4,500 per kW.



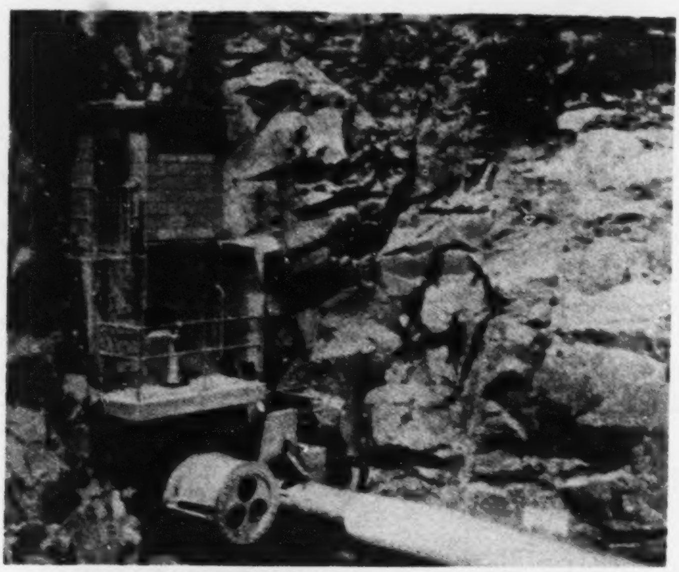
Black Butte Dam, on Stony Creek in Tehama County, is owned by the U. S. Army Corps of Engineers. A 9 200-kilowatt hydroelectric power plant at this site could generate 31.3 million kilowatthours of electricity per year. This amount of energy would supply the annual electrical residential needs of 14,900 people. (Photo by DWR Energy Division)

Figure 8 Estimated Costs of 28 Projects Studied by the Department of Water Resources



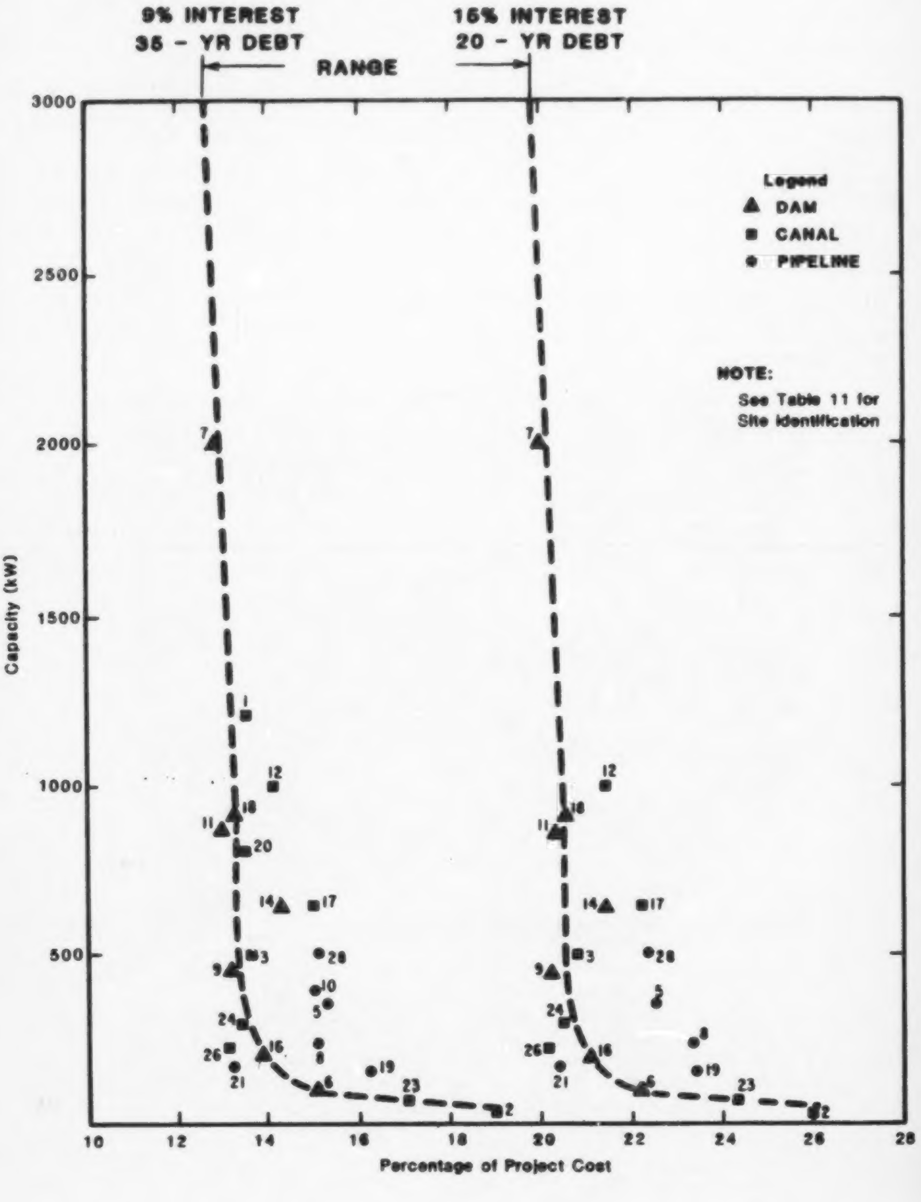
Annual Cost. The annual cost of owning and operating a hydroelectric project is principally debt payment, paying the interest and a portion of the borrowed principal. The remainder of the annual cost pays for operation and maintenance, insurance for the equipment, and the replacement of minor components that have shorter useful lives than the main generating facilities.

The interest rate for a long-term debt of 20 to 35 years has increased significantly since the third quarter of 1979. This reflects the current general American inflation and investor concern about the future rate of inflation. It is anticipated that the interest rate for hydroelectric development will continue at a high level for at least the next five years. Prior to the third quarter of 1979, the interest rate for tax-exempt bonds--as reflected by the Bond Buyer Index of 20 Bonds--was about 7 percent, and new, taxable utility bonds averaged 9.5 to 10 percent. From the third quarter of 1979 to mid-1980, the interest rate for tax-exempt bonds was about 9 percent, while that for taxable utility bonds was 12 to 13 percent. The interest rate for a loan of the $2 million to $10 million required for a small hydroelectric project could be as high as 15 percent under conventional financing.



Hell Hole Reservoir (Lower Hell Hole Dam), on the Rubicon River in Placer County, is owned by the Placer County Water Agency. A 400-kilowatt hydroelectric power plant at this site could generate 3 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 5,100 barrels of oil in a fossil-fuel power plant. (Photo by DWR Division of Safety of Dams)

Figure 9 Annual Cost of Owning and Operating Small Hydroelectric Projects



The financing of small hydroelectric projects is discussed in Appendix H and also shows how interest during construction and the cost of financing are included in the fixed annual costs. The range of total annual costs is fairly uniform at 13 to 21 percent of project costs for hydroelectric facilities with capacities of about 200 kW and greater (Figure 9). For hydroelectric facilities of less than 200 kW capacity, the annual costs increase significantly because a facility has basic maintenance and insurance costs regardless of its installed capacity.

Energy Generation. Besides the head, the annual energy output of a particular hydroelectric facility depends on the quantity of water that passes through its turbine. A hydroelectric installation at an irrigation structure would have flows available during the irrigation season from May through September, but there might not be any flow during other months of the year. Flood control dams, on the other hand, have normal release patterns during the winter and spring months.

Energy generation (kWh) is equal to the average number of kilowatts (kW)--calculated from the head and average flow in the same manner as for design capacity--times the number of hours that the head and flow are available. These calculations for the 28 selected sites are discussed in Appendix C and provide the guidelines for calculating energy generation at other facilities.

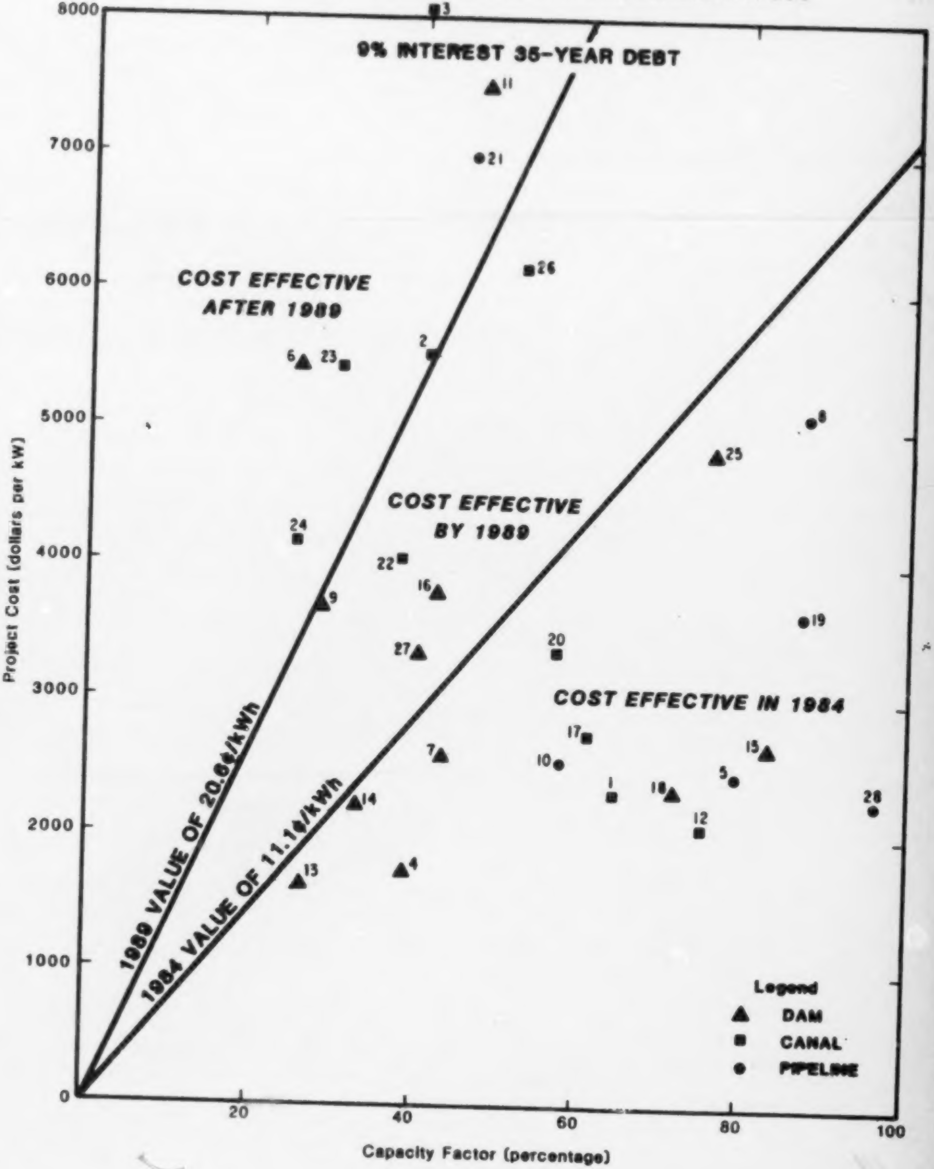
Capacity Factor. The capacity factor of a hydroelectric installation is the ratio of the energy generated (kWh) to the total amount of energy that would be produced if the facility could operate at its design capacity throughout the period being considered, usually a year.

Capacity factors for the 28 preliminary feasibility studies ranged between 25 and 90 percent; most sites fell in the range of 40 to 60 percent. Pipeline installations usually showed higher capacity factors because distribution systems usually operate most of the year. The capacity factor is a useful, common base for evaluating the relationship between the cost and the value (revenues from sales) of generation.

Utility Payments for Hydroelectric Generation. The value of generation is the price a purchaser would pay for the capacity and energy produced by a project. This is discussed in detail in Chapter II and Appendix G. In mid-1980, the price PGandE would pay for cogeneration averaged about 6.1 cents per kWh, and PGandE's proposed policy for pricing hydroelectric generation averaged about 4.0 to 4.2 cents per kWh. Southern California Edison Company's (SCE) published price averaged about 5.1 cents per kWh, and San Diego Gas and Electric Company's (SDG&E) price averaged about 5.9 cents per kWh.

These prices escalate along with the price of oil. Using the California Energy Commission's (CEC) median price projection for future oil and a 12 percent inflation rate, the value of hydroelectric energy in 1984 would be about 11.1 cents per kWh under PGandE's cogeneration rate and 8.7 cents per kWh under its proposed hydroelectric rate. The value of capacity, if applicable, would be in addition to the value of energy for a total of about 12.3 cents per kWh for cogeneration and 8.9 cents per kWh for hydroelectric generation in 1984. The comparable SCE value for 1984

Figure 10 Preliminary Assessment of 28 Sites Studied by the Department of Water Resources



would be 10.1 cents per kWh for energy plus about 1 cent for capacity, and SDGandE's value would be 11.7 cents for energy plus about 1.3 cents for capacity. The values estimated for other years are shown in Table 8, Chapter II. To estimate the number of sites that are cost effective, the price that utilities would pay for hydroelectric generation was assumed to be 11.1 cents per kWh in 1984 and 20.6 cents per kWh in 1989.

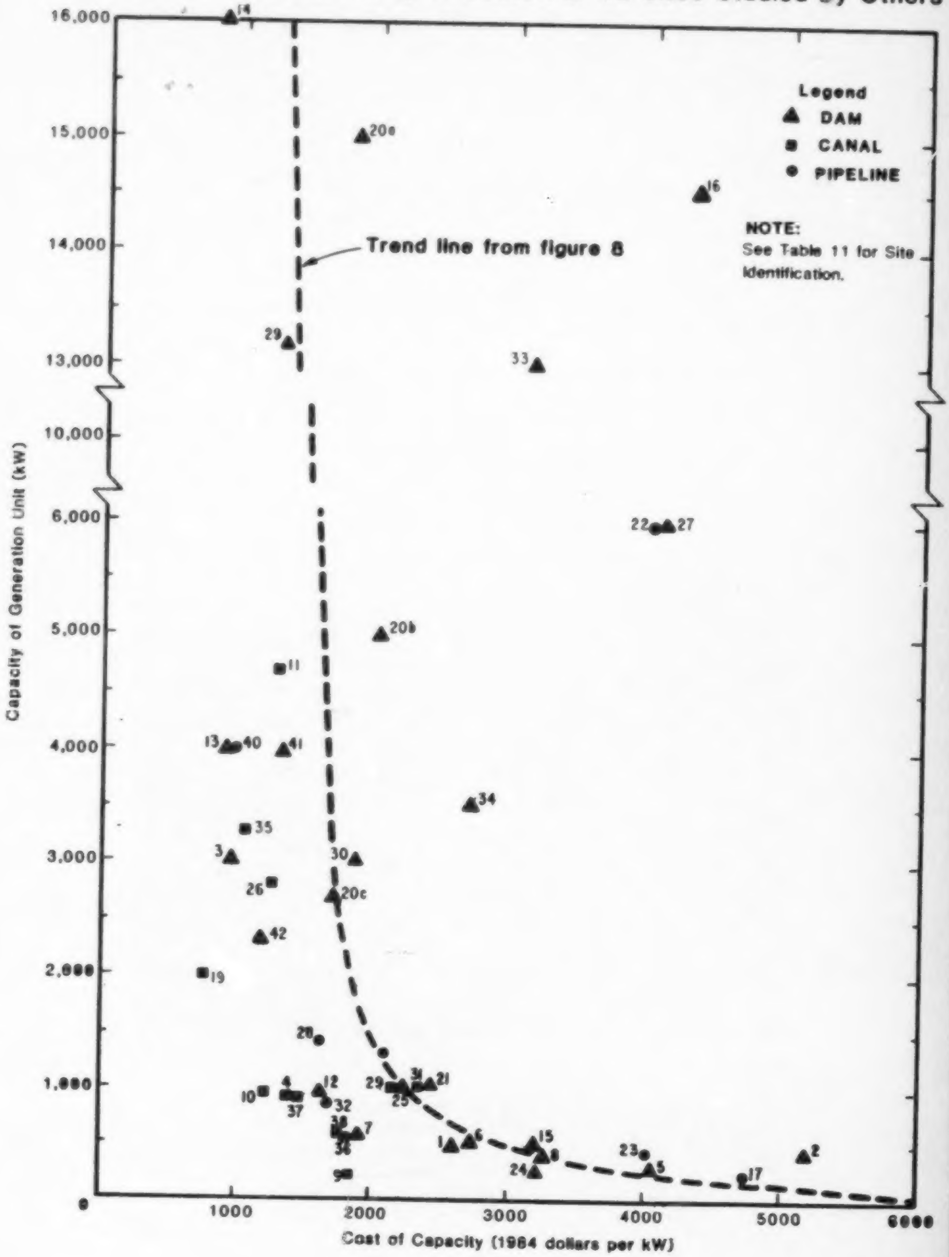
Assessment of 28 Sites by the Department of Water Resources

According to the rates published by PGandE, SDG&E, and SCE, the value of hydroelectric generation is primarily the energy value because the avoided costs are based on oil-fired generation. The average value of hydroelectric generation--the published price that would be paid for such generation--can be expressed as the break-even project cost of a hydroelectric facility. The break-even point is reached when the annual cost of owning and operating the project equals the revenues received from the sale of the project's generation. For example, the break-even cost for a project financed at 12 percent interest for 20 years (resulting in an annual cost of 19 percent of project cost), operating at a 50 percent capacity factor, and an energy value of 11.1 cents per kWh, is equal to ($0.111 x 0.5 x 8760/0.19) or about $2560 per kW. The break-even costs will be different with different interest rates, terms of financing, and energy values. The allowable project cost is directly related to capacity factor.

The relative economic feasibility of each of the 28 representative sites is shown in Figure 10. The sloped lines represent the break-even

Combie Dam, on the Bear River in Nevada County, is owned by the Nevada Irrigation District. A 1 000-kilowatt hydroelectric power plant at this site could generate 4 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 6,800 barrels of oil in a fossil-fuel power plant.
(Photo by DWR Division of Safety of Dams)

Figure 11 Estimated Project Costs For 42 Sites Studied by Others



project costs for a 9 percent interest rate and a 35-year term of debt, assuming the energy value is 11.1 cents per kWh in 1984 and 20.6 cents in 1989. The numbers and symbols represent facilities and correspond to the sequence used for identifying the 28 sites listed in Table 11 and discussed in Appendix C.

Sixteen of the 28 facilities would be cost effective in 1984, and represent a total installed capacity of 21 875 kW and an annual energy generation of 91 million kWh. Five additional sites would be cost effective by 1989; the remaining 7 sites would not prove cost effective under current fuel cost projections.

The cost of generation at each of the 28 sites is tabulated in cents per kWh in Table 11.

Assessment of 42 Sites by Others

The studies prepared by others vary in scope from preliminary assessments to full-fledged feasibility studies. Because the studies were prepared at different times by different engineering firms or by owners, there is no common basis for estimating costs. For these reasons, the results presented here should be used only as an indication of cost effectiveness. The estimated project costs of the 42 sites, are presented in Figure 11. The numbers and symbols represent facilities and correspond to the sequence used for identifying the 42 sites listed in Table 11 and discussed in Appendix D. The dashed trend line shown in the figure was developed from data collected during the 28 studies prepared by the Department.

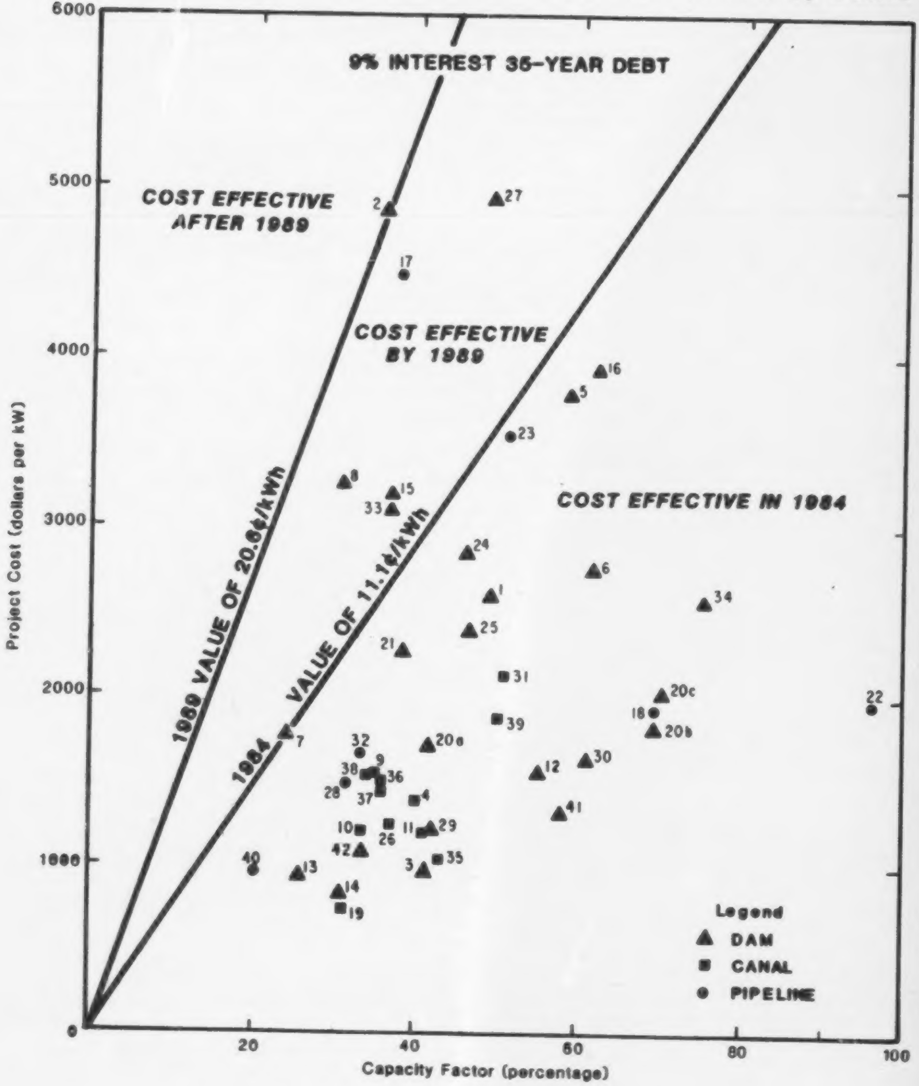
Before assessing the economic feasibility of the 42 facilities, the project costs presented in the reports were increased at 12 percent annually to cover inflation to 1984. The annual cost of owning and operating each proposed power plant was also estimated based on the information developed in the Department's studies. These annual costs (as a percentage of the project costs) are given for a range of interest rates and terms of debt service (Figure 9).

The cost effectiveness of each of the 42 sites was estimated by comparing annual costs to the expected annual revenue from project generation. The relative economic feasibility of each of the 42 sites, based on energy values of 11.1 cents per kWh in 1984 and 20.6 cents in 1989, is shown in Figure 12. The break-even costs are shown for an interest rate of 9 percent and a 35-year term of debt.

Based on the estimated energy value of 11.1 cents per kWh, 36 of the 42 facilities would be cost effective in 1984. They represent a total installed capacity of 134 135 kW and an annual generation of 610 million kWh. Five additional facilities would be cost effective by 1989; only one facility would not prove cost effective under current fuel cost projections.

The cost of generation at each of the 42 sites is tabulated in cents per kWh in Table 11.

Figure12 Preliminary Assessment of 42 Sites Studied by Others



Assessment of 215 Sites From Data on Questionnaires

The Department's questionnaires provided sufficient information to estimate the installed capacity, energy generation, and capacity factor for 215 sites. The head and flow data from the questionnaires are assumed to be approximations and, in many instances, may be optimistic estimates of the resource.

Although these 215 sites may be suitable for power development, on-site inspections by qualified engineers, and refined head and flow data are needed before their cost effectiveness as small hydroelectric developments can be confirmed. To estimate their cost effectiveness, the cost information developed from the Department's 28 feasibility studies was used as a basis. The cost in dollars per kW, based on the estimated installed capacity, was obtained from Figure 8. The annual cost of owning and operating each site was then estimated from Figure 9.

At an interest rate of 9 percent, a 35-year debt repayment period, and an energy value of 11.1 cents per kWh, 115 sites would be cost effective in 1984; they represent a total installed capacity of 311 290 kW and an annual generation of 1.5 billion kWh. An additional 63 sites would be cost effective by 1989; 37 sites would not prove cost effective under current fuel cost projections.

The cost of generation for each of the 215 sites is tabulated in cents per kWh in Table 11.

Summary of Assessment

The estimates of the economic feasibility of the 285 potential hydroelectric sites at existing facilities were based on several factors:

(1) Cost data developed from the Department's preliminary feasibility studies of 28 sites;

(2) The estimated cost and estimated annual generation at 42 sites studied by others;

(3) The estimated capacity and estimated energy generated at 215 sites whose information was obtained from questionnaires;

(4) A 35-year debt at an assumed interest rate of 9 percent; and

(5) Estimated payment by utilities for hydroelectric generation of 11.1 cents per kWh in 1984, and 20.6 cents in 1989.

To determine the number of power plants that would be cost effective in 1989, it was assumed that these power plants would be constructed and on line by 1984, and that the developer would operate the power plant at a loss for the first one to five years.

Based on these conditions and assumptions the cost effectiveness of small hydroelectric development at 285 existing facilities in California are listed in Table 11 and summarized in Table 12, and Figure 1.

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
	FACILITIES STUDIED BY DEPARTMENT OF WATER RESOURCES					
1. Alamo Drop 3A (Canal)	Imperial Irrigation District	2	1 200	6.7	2,312	6.4
2. Anderson Flume Diversion (Canal)	Anderson-Cottonwood Irrigation District	2	50	0.2	5,518	28.5
3. Beardsley Diversion Structure (Canal)	City of Bakersfield, et al	2	500	1.7	8,062	31.5
4. Black Butte Dam	U. S. Army Corps of Engineers	2,4	9 200	31.3	1,717	6.4
5. Buckeye Conduit	Georgetown Divide Public Utility District	2	350	2.4	2,451	5.4
Carrier Canal Project	(See Rocky Point Diversion Dam)					
6. Chesbro Reservoir (Elmer J. Chesbro Dam)	South Santa Clara Valley Water and Conservation District	2	100	0.2	5,343	36.8
7. Clear Lake Impounding Dam	Yolo County Flood Control and Water Conservation District	2	2 000	7.5	2,469	8.2
8. Del Loma Tunnel	George Costa	2,3	250	1.9	5,138	10.2
Elmer J. Chesbro Dam	(See Chesbro Reservoir)					
9. Frenchman Dam	California Department of Water Resources	2	450	1.0	3,657	20.0
10. Glendale Distribution System (Pipeline)	City of Glendale	2	400	2.0	2,558	6.9
11. Gould Weir Diversion Dam	Fresno Irrigation District	2	850	3.5	7,499	23.7
12. Harding Canal	Browns Valley Irrigation District	2,4	1 000	6.6	2,077	4.5
13. Indian Valley Dam	Yolo County Flood Control and Water Conservation District	2	3 200	7.2	1,648	10.5
14. Jenkinson Lake (Sly Park Dam)	U. S. Water and Power Resources Service	2,3	650	1.8	2,208	10.9
15. Lake Amador (Jackson Creek Dam)	Jackson Valley Irrigation District	2	350	2.5	2,631	5.1
16. Lake Shastina (Shasta River Dam)	Montague Water Conservation District	2	200	0.7	3,608	13.4
17. Lemoncove Ditch (At Terminus Dam)	U. S. Army Corps of Engineers	2	650	3.5	2,754	7.7
Mark Edson Dam	(See Stumpy Meadows Reservoir)					
18. Merle Collins Reservoir (Virginia Ranch Dam)	Brown Valley Irrigation District	2,4	900	5.6	2,314	4.9

1. Status Unknown
2. Appraisal or Feasibility Study Completed
3. Application Filed for FERC Preliminary Permit
4. FERC Preliminary Permit Issued
5. Application Filed for FERC Exemption or License
6. FERC Exemption or License Issued
7. Under Construction
8. Insufficient Data Received

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
19. Mount Olivette (Pipeline)	City of Santa Monica	2	150	1.1	3,646	7.9
20. No. 8 Heading (Canal)	Imperial Irrigation District	2	750	3.9	3,362	10.0
21. North Portal Tecolote Tunnel	U. S. Water and Power Resources Service	2	175	0.7	6,993	22.4
22. Parkview Station (Canal)	Anderson-Cottonwood Irrigation District	2	150	0.5	4,030	15.8
23. Pumping Plant Lower (Canal)	Montague Water Conservation District	2	65	0.2	5,331	34.4
24. Rocky Point Diversion Structure (Carrier Canal Project)	City of Bakersfield, et al	2,3	300	0.7	4,150	24.8
Sly Park Dam	(See Jenkinson Lake)					
25. Stumpy Meadows Reservoir (Mark Edson Dam)	Georgetown Divide Public Utility District	2	325	2.2	4,652	8.5
26. Uvas Dam	South Santa Clara Valley Water Conservation District	2	300	1.0	3,267	13.1
27. Vail Heading (Canal)	Imperial Irrigation District	2	225	1.0	6,167	17.8
28. West Coast Basin Barrier (Pipeline)	Los Angeles County Flood Control District	2	500	4.2	2,270	4.1
	FACILITIES STUDIED BY OTHERS					
ACID Diversion Dam	(See Lake Redding)					
1. Anderson Lake (Leroy Anderson Dam)	Santa Clara Valley Water District	2	500	2.2	2,610	8.0
2. Antelope Dam	California Department of Water Resources	2	450	1.4	5,200	22.8
3. Bowman Dam	Nevada Irrigation District	2	3 000	14.7	1,080	2.7
4. Canal Creek	Merced Irrigation District	2,6	940	3.3	1,540	5.7
Canal Drop No. 1,2,6,7, and 9	(See Turlock Main Canal)					
5. Castaic Outlet (Dam)	California Department of Water Resources	2	275	1.4	4,030	10.7
6. Combie Dam	Nevada Irrigation District	2,4	525	2.9	3,060	7.5
7. Coyote Dam	Santa Clara Valley Water District	2	600	1.3	1,990	12.4
8. Del Valle Stream Release (Dam)	California Department of Water Resources	2	400	1.1	3,450	16.9
9. Escaladian Headworks (Canal)	Merced Irrigation District	2,6	270	0.8	1,870	8.3

See footnotes on first page

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
10. Fairfield Drop (Canal)	Merced Irrigation District	2,6	970	2.8	1,380	6.3
11. Frankenheimer Drop (Canal)	South San Joaquin Irrigation District	2,5	4 700	17.0	1,320	4.4
Friant Dam	(See Millerton Lake)					
12. Goodwin Dam	Oakdale and South San Joaquin Irrigation District	2	970	4.7	1,710	4.6
Grizzly Valley Dam	(See Lake Davis)					
13. Jackson Meadows Dam	Nevada Irrigation District	2	4 000	8.9	1,010	5.4
14. Lake Berryessa (Monticello Dam)	U. S. Water and Power Resources Service	2,5	16 000	43.0	920	4.1
15. Lake Davis (Grizzly Valley Dam)	California Department of Water Resources	2	510	1.5	3,380	15.5
16. Lake Redding (ACID Diversion Dam)	Anderson-Cottonwood Irrigation District	2,4	14 500	79.0	4,390	9.7
17. Las Flores Turnout (Pipeline)	California Department of Water Resources	2	210	0.7	4,750	20.0
Leroy Anderson Dam	(See Anderson Lake)					
18. Lytle Creek Turnout (Pipeline)	San Bernardino Valley Municipal Water District	2,4	1 300	7.8	2,130	4.6
19. Madera Canal Station 980+65	U. S. Water and Power Resources Service	2	2 000	5.5	840	3.8
20. Millerton Lake (Friant Dam)						
(a) Friant-Kern Canal	U. S. Water and Power Resources Service	2,4	15 000	90.3	1,860	3.7
(b) Madera Canal	U. S. Water and Power Resources Service	2,4	5 000	30.6	2,050	4.0
(c) San Joaquin River)	U. S. Water and Power Resources Service	2,4	2 700	9.9	1,750	5.9
21. Modesto Reservoir (Dam)	Modesto Irrigation District	2	1 000	3.4	2,510	9.6
22. Mojave Siphon No. 1 (Silverwood Lake Inlet, Pipeline)	California Department of Water Resources	2	6 000	47.0	4,029	6.2
Monticello Dam	(See Lake Berryessa)					
23. Palermo Canal Release	California Department of Water Resources	2	400	1.5	4,023	14.5
24. Paradise Dam	Paradise Irrigation District	2	300	1.2	3,160	10.7
25. Pyramid Stream Release (Dam)	California Department of Water Resources	2	1 000	3.2	2,208	9.0
26. Richard B. Parker (On Main Canal)	Merced Irrigation District	2,6	2 800	9.2	1,400	5.4
27. San Antonio Dam	Monterey County Flood Control and Water Conservation District	2,4	6 000	25.6	4,200	11.8

See footnotes on first page

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
28. Santa Ana Low Turnout (Pipeline)	San Bernardino Valley Municipal Water District	2,4	1 400	3.8	1,660	8.0
29. Sly Creek Dam	Oroville-Wyandotte Irrigation District	2,5	13 200	48.2	1,360	4.5
30. Stampede Dam	U. S. Water and Power Resources Service	2	3 000	16.0	1,820	4.3
31. Stone Drop (Canal)	Modesto Irrigation District	2	1 000	4.0	2,390	9.6
32. Sweetwater Turnout (Pipeline)	San Bernardino Valley Municipal Water District	2,4	875	2.2	1,840	9.5
33. Thermalito Afterbay River Outlet (Dam)	California Department of Water Resources	2,6	13 000	42.6	3,290	12.1
34. Thermalito Diversion Dam	California Department of Water Resources	2,6	3 500	23.0	2,700	5.1
35. Turlock Main Canal Drop No. 1	Turlock Irrigation District	7	3 260	12.2	1,170	3.7
36. Turlock Main Canal Drop No. 2	Turlock Irrigation District	2	660	2.1	1,800	7.6
37. Turlock Main Canal Drop No. 6	Turlock Irrigation District	2,5	920	2.9	1,620	6.7
38. Turlock Main Canal Drop No. 7	Turlock Irrigation District	2	700	2.1	1,770	8.0
39. Turlock Main Canal Drop No. 9	Turlock Irrigation District	7	1 070	4.7	2,090	6.2
40. Waterman Canyon Turnout (Pipeline)	San Bernardino Valley Municipal Water District	2,4	4 000	7.0	1,090	7.5
41. Whiskeytown Dam	U. S. Water and Power Resources Service	2,4	4 000	19.5	1,460	3.6
42. Woodward Dam	South San Joaquin Irrigation District	2,6	2,300	6.9	1,210	5.0

See footnotes on first page

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
	FACILITIES EVALUATED FROM QUESTIONNAIRES					
Alamitos Barrier (Dam)	Los Angeles County Flood Control District	1	300	1.0	3,900	15.8
Alisal Creek Dam	Peten Company	1	50	0.2	5,600	27.3
All-American Canal Drop No. 1	U. S. Water and Power Resources Service	2	4 700	27.0	1,600	3.3
All-American Canal Drop No. 5	U. S. Water and Power Resources Service	2	5 000	24.0	1,600	4.0
Alvarado Treatment Plant (Pipeline)	City of San Diego	2	1 700	8.4	1,950	5.1
Anthony House Dam	Lake Wildwood Association	1	50	0.2	5,600	27.3
Ash Main Canal	Chowchilla Water District	1	150	0.7	4,950	14.9
Azusa Flow Control Structure (Pipeline)	San Gabriel Valley Municipal Water District	2	740	3.2	2,550	8.0
Balboa (Pipeline)	Metropolitan Water District of Southern California	2,5	1 200	9.1	2,050	3.5
Barrett Dam	City of San Diego	1	60	0.2	5,600	32.8
Beardsley Canal Control Structure	City of Bakersfield, et al	3	260	1.1	4,200	13.4
Bear Valley Powerplant (Rehabilitation)	Escondido Mutual Water Company	2,5	700	3.7	2,600	6.6
Benson Feeder Pipeline	Monte Vista County Water District	1	8/	8/	--	--
Big Creek Hydroelectric Plant (Rehabilitation)	Lockheed Missles and Space Company, Inc.	2	800	3.0	2,450	8.8
Big Dalton Dam	Los Angeles County Flood Control District	1	50	0.1	5,600	53.2
Big Dalton Pressure Reducing Station (Pipeline)	San Gabriel Valley Municipal Water District	2	280	1.2	4,150	13.1
Big Sage Dam	Hot Springs Valley Irrigation District	1	175	0.7	4,700	16.5
Big Tujunga No. 1 Dam	Los Angeles County Flood Control District	1	300	1.3	3,900	12.2
Boca Dam	U. S. Water and Power Resources Service	2,4	2 000	5.6	1,900	8.5
Box Canyon Dam	(See Lake Siskiyou)					
Buhach (Canal)	Merced Irrigation District	1	60	0.3	5,600	21.8
Buchanan Dam	(See H.V. Eastman Lake)					

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Bucks Lake (Bucks Storage Dam)	Pacific Gas and Electric Company	1	740	3.2	2,550	8.0
Bucks Storage Dam	(See Bucks Lake)					
Buffalo Hill Siphon (Pipeline)	Georgetown Divide Public Utility District	1	160	0.5	4,950	22.2
Buhach Drop (Canal)	Merced Irrigation District	1	60	0.3	5,600	21.8
Cache Slough (Pipeline)	City of Vallejo	1	600	4.1	2,850	5.6
Calaveras Dam	City and County of San Francisco	1	700	3.2	2,600	7.7
Calero Dam	Santa Clara Valley Water District	1	100	0.5	5,450	16.4
Califa Canal	Chowchilla Water District	1	200	0.9	4,500	14.0
Comanche Dam (Lower Mokelumne River Project)	East Bay Municipal Utility District	5	10 680	35.0	1,500	5.5
Camp Far West Dam	South Sutter Water District	5	6 800	26.9	1,550	4.7
Cardinal Power House	Southern California Edison Company		2 500	10.3	1,800	5.5
Carneros Power Project (Pipeline)	Goleta County Water District	1	700	1.6	2,600	15.4
Casitas Dam	U. S. Water and Power Resources Service	1	700	2.0	2,600	12.3
Central Amador Water Project	Amador County Water Agency	2	250	0.7	4,200	20.3
Ceres Spillway (Canal)	Turlock Irrigation District	1	2 100	4.5	1,850	10.8
Chowchilla Main Canal						
Station 0+00	Chowchilla Water District	2	250	1.1	4,200	12.9
Station 101+80	Chowchilla Water District	2	250	1.1	4,200	12.9
Station 175+00	Chowchilla Water District	2	250	1.1	4,200	12.9
City Creek Turnout (Pipeline)	San Bernardino Valley Municipal Water District	1	2 000	3.0	1,900	15.8
Clear Lake Dam	U. S. Water and Power Resources Service	1	430	1.9	3,350	10.2
Cogswell Dam	Los Angeles County Flood Control District	1	500	3.0	3,100	7.0
Concow Dam	Thermalito Irrigation District and Table Mountain Irrigation District	1	130	0.4	5,100	24.0
Conejo Pump Station (Pipeline)	Calleguas Municipal Water District	2	600	3.0	2,850	7.7
Conn Creek Dam	(See Lake Hennessey)					
Corona (Pipeline)	Metropolitan Water District of Southern California	2,5	2 800	18.0	1,700	3.3

See footnotes on first page

Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Cottonwood No. 1 (Canal)	California Department of Water Resources	2,7	17 000	115.0	2,837	5.0
Cottonwood No. 2 (Canal)	California Department of Water Resources	2	12 000	90.0	1,450	2.3
Covina (Pipeline)	Metropolitan Water District of Southern California	2,5	2 500	16.9	1,800	3.3
Coyote Creek (Dam)	Hidden Valley Lake Association	1	90	0.4	5,450	18.3
Coyote Creek (Pipeline)	Metropolitan Water District of Southern California	2,5	2 900	19.6	1,700	3.1
Coyote Dam	(See Lake Mendocino)					
Dahlia Drop (Canal)	Imperial Irrigation District	1	225	1.0	4,350	13.2
Deer Creek Colletion Pipeline	Cucamonga County Water District	1	200	1.0	4,500	12.2
Dodge Ave Check (Canal)	Orange Cove Irrigation District	2	475	2.4	3,200	8.6
Dominguez Gap Barrier (Pipeline)	Los Angeles County Flood Control District	1	500	2.0	3,100	10.5
Doris Dam	U. S. Fish and Wildlife Service	1	50	0.1	5,600	54.6
Early Intake Dam	City and County of San Francisco	1	1 300	8.7	2,050	4.0
East Highline Canal Turnout	Imperial Irrigation District	1	1 800	10.0	1,950	4.4
East Park Dam	U. S. Water and Power Resources Service	3	900	2.0	2,300	13.5
Eastside Pipeline	Lost Hills Water District	1	1 000	3.0	2,150	9.3
El Dorado Distribution System (Pipelines)						
Reservoir A	El Dorado Irrigation District	1	730	3.2	2,550	7.9
Reservoir 2	El Dorado Irrigation District	2	50	0.2	5,600	27.3
Reservoir 2A	El Dorado Irrigation District	1	480	2.1	3,200	9.9
Reservoir 2A-3	El Dorado Irrigation District	2	360	1.6	3,650	11.1
Reservoir 3	El Dorado Irrigation District	1	200	0.9	4,500	14.0
Reservoir 5	El Dorado Irrigation District	1	60	0.3	5,600	21.8
Reservoir 6	El Dorado Irrigation District	1	80	0.3	5,500	22.7
Reservoir 8	El Dorado Irrigation District	1	175	0.8	4,700	14.4
Reservoir 9A	El Dorado Irrigation District	1	175	0.8	4,700	14.4
Reservoir 9B	El Dorado Irrigation District	1	90	0.4	5,450	18.4
Reservoir 10A	El Dorado Irrigation District	1	175	0.8	4,700	14.4

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Reservoir 10B	El Dorado Irrigation District	1	60	0.3	5,600	21.8
El Segundo Distribution System (Pipeline)	City of El Segundo	2	500	3.9	3,100	5.4
Emerald Pressure Reducing Station (Pipeline)	San Gabriel Valley Municipal Water District	2	340	1.5	3,700	11.3
Etiwanda Pressure Reducing Station (Pipeline)	San Gabriel Valley Municipal Water District	2	250	1.1	4,200	12.9
Farmington Dam	U. S. Army Corps of Engineers	1	400	2.0	3,450	9.3
Fisher Drop (Canal)	Merced Irrigation District	1	75	0.3	5,500	24.1
Folsom Lake Pipeline	U. S. Water and Power Resources Service	2,4	500	2.4	3,100	8.7
Franklin Inlet (Pipeline)	City of Los Angeles	1	800	6.8	2,450	3.9
French Lake (Dam)	Nevada Irrigation District	1	200	0.8	4,500	15.8
Fresno Main Canal						
Headworks	Fresno Irrigation District	1	650	2.6	2,700	9.1
Boos Check	Fresno Irrigation District	1	650	2.6	2,700	9.1
Dresser Check	Fresno Irrigation District	1	650	2.6	2,700	9.1
Gibraltar Dam	City of Santa Barbara	3	1 500	4.0	2,000	9.8
Grant Lake (Dam)	City of Los Angeles	1	1 500	3.0	2,000	13.0
Guadalupe Dam	Santa Clara Valley Water District	1	60	0.3	5,600	21.8
Hell Hole Reservoir (Lower Hell Hole Dam)	Placer County Water District	2,5	550	3.0	2,975	7.4
Henshaw Dam	Vista Irrigation District	1	200	1.0	4,500	12.6
Hensley Lake (Hidden Dam)	U. S. Army Corps of Engineers	4	1 300	4.0	2,050	8.7
Hetch Hetchy Reservoir (O'Shaughnessy Dam)	City and County of San Francisco	2	1 600	6.0	2,000	6.9
Hickman Spillway	Turlock Irrigation District	1	2 100	4.5	1,850	10.8
Hidden Dam	(See Hensley Lake)					
Highland Avenue Pumping Plant (Pipeline)	City of Redlands	2	600	2.6	2,850	8.9
Hour House Dam	Yuba County Water Agency	1	100	0.3	5,450	27.3
Hume Lake (Dam)	U. S. Forest Service	4	1 050	4.6	2,150	6.4

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
H.V. Eastman Lake (Buchanan Dam)	U. S. Army Corps of Engineers	4	3 000	9.0	1,700	7.1
Ice House Reservoir (Dam)	Sacramento Municipal Utility District	2	10 000	22.0	—	—
Indian Creek Dam	South Tahoe Public Utility District	1	50	0.1	5,600	54.6
Irvine Lake Pipeline	Irvine Ranch Water District	2	500	1.0	3,100	20.9
Isabella Dam	U. S. Army Corps of Engineers	3	8 000	18.5	1,550	8.0
Jackson Creek Dam	(See Lake Amador)					
Jackson-Sutter Creek Outfall Pipeline	Amador County Water Agency	1	60	0.2	5,600	31.8
Jameson Lake (Juncal Dam)	Montecito County Water District	1	60	0.4	5,600	16.4
Juncal Dam	(See Jameson Lake)					
Kelser Pipeline	Georgetown Divide Public Utility District	1	120	0.3	5,100	29.1
Kent Lake (Peters Dam)	Marin Municipal Water District	1	150	0.4	4,950	26.0
Kern Island Canal Control Structure	City of Bakersfield, et al	1	700	3.1	2,600	7.9
Lake Arrowhead Dam	Arrowhead Lake Association	1	75	0.3	5,500	24.1
Lake Clementine (North Fork Dam)	U. S. Army Corps of Engineers	3	12 000	63.5	1,400	3.2
Lake Curry (Pipeline)	City of Vallejo	1	50	0.3	5,600	27.3
Lake Davis-Portola Pipeline	Plumas County Flood Control and Water Conservation District	1	60	0.3	5,600	21.8
Lake Eleanor Dam	City of San Francisco	1	60	0.3	5,600	21.8
Lake Fordyce Dam	Pacific Gas and Electric Company	1	900	4.0	2,300	6.7
Lake Hemet Dam	Lake Hemet Municipal Water District	1	75	0.1	5,500	72.2
Lake Hennessey (Conn Creek Dam)	City of Napa	1	500	2.3	3,100	9.1
Lake Hodges Dam	City of San Diego	1	270	1.2	4,150	12.6
Lake Kaweah (Terminus Dam)	U. S. Army Corps of Engineers	3	4 000	20.0	1,650	4.0
Lake Loveland Dam	South Bay Irrigation District	1	100	0.5	5,450	16.4
Lake Mary and Twin Lakes Open Diversion (Pipeline)	Mammoth County Water District	1	300	0.8	3,900	19.7
Lake Mendocino (Coyote Dam)	U. S. Army Corps of Engineers	2,4	4 000	21.0	1,650	3.8
Lake Pillsbury (Scott Dam)	Pacific Gas and Electric Company	1	5 000	15.0	1,600	6.4
Lake Piru (Santa Felicia Dam)	United Water Conservation District	3	3 600	7.8	1,650	9.1

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Lake Siskiyou (Box Canyon Dam)	Siskiyou County Flood Control and Water Conservation District	2,4	6 000	21.9	1,600	5.3
Lake Thomas A. Edison (Vermillion Valley Dam)	Southern California Edison	1	2 000	9.6	1,900	4.9
Lake Valley Dam	Pacific Gas and Electric Company	1	75	0.3	5,500	24.1
Lake Yosemite Dam	Merced Irrigation District	1	1 200	2.3	2,050	13.9
Lateral A (Chute)	Tulare Lake Basin Water Storage District	1	1 600	7.0	2,000	5.9
Lateral B (Chute)	Tulare Lake Basin Water Storage District	1	900	4.0	2,300	6.7
Lexington Dam	Santa Clara Valley Water District	1	500	2.9	3,100	7.2
Little Grass Valley Dam	Oroville-Wyandotte Irrigation District	1	2 600	6.5	1,750	8.8
Littlerock Dam	Palmdale Water District	1	50	0.2	5,600	27.3
Lopez Dam	San Luis Obispo County Flood Control and Water Conservation District	1	50	0.4	5,600	13.7
Los Angeles Distribution System (Pipelines)						
Location 1	City of Los Angeles	1	610	3.3	2,850	7.1
Location 2	City of Los Angeles	1	270	2.2	4,150	6.9
Location 3	City of Los Angeles	1	420	2.1	3,400	9.1
Location 4	City of Los Angeles	1	270	1.8	4,150	8.4
Location 5	City of Los Angeles	1	140	1.2	4,950	8.1
Location 6	City of Los Angeles	1	190	1.1	4,500	10.9
Location 7	City of Los Angeles	1	120	1.0	5,100	8.9
Location 8	City of Los Angeles	1	130	0.8	5,100	12.0
Location 9	City of Los Angeles	1	70	0.6	5,500	11.6
Location 10	City of Los Angeles	1	100	0.6	5,450	13.6
Location 11	City of Los Angeles	1	70	0.6	5,500	11.6
Location 12	City of Los Angeles	1	100	0.6	5,450	13.6
Location 13	City of Los Angeles	1	60	0.5	5,600	13.1
Location 14	City of Los Angeles	1	60	0.5	5,600	13.1
Location 15	City of Los Angeles	1	1 000	8.2	2,150	3.4
Location 16	City of Los Angeles	1	1 800	9.0	1,950	4.9

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Los Angeles Reservoir (Dam)	City of Los Angeles	1	6 200	37.0	1,600	3.2
Los Banos Detention Dam	U. S. Water and Power Resources Service	1	100	0.5	5,450	16.4
Los Padres Dam	California American Water Company	1	75	0.3	5,500	24.1
Lost Creek Diversion Dam	U. S. Forest Service	3	1 800	10.0	1,950	4.4
Lower Hell Hole Dam	(See Hell Hole Reservoir)					
Lower Mokelumne River Project	(See Camanche Dam)					
Lyons Dam	Pacific Gas and Electric Company	2	300	1.5	3,900	10.5
Madera Canal						
Station 1064+67	U. S. Water and Power Resources Service	2	560	1.9	2,975	11.8
Station 1910+60	U. S. Water and Power Resources Service	2	650	2.6	2,700	9.1
Mallard Reservoir (Pipeline)	Contra Costa County Water District	1	200	0.9	4,500	14.0
Matilija Dam	Ventura County Flood Control District	1	700	2.0	2,600	12.3
Martis Creek Dam	U. S. Army Corps of Engineers	1	250	1.1	4,200	12.9
McCloud Dam	Pacific Gas and Electric Company	1	1 200	5.4	2,050	5.9
McCoy Flat Dam	Lassen Irrigation Company	1	50	0.2	5,600	27.3
Middle Fork Dam	(See Schadds Reservoir)					
Miramar Treatment Plant (Pipeline)	City of San Diego	2	1 300	5.7	2,050	6.1
Moccasin Lower Dam	City of San Francisco	2	1 600	7.0	2,000	5.9
Mojave Siphon No. 2 (Silverwood Lake Inlet Pipeline)	California Department of Water Resources	2	10 000	78.0	1,500	2.3
Mono Creek Diversion Dam	Southern California Edison	1	8/	8/	--	--
New Hogan Dam	U. S. Army Corps of Engineers	2,4	2 250	9.5	1,850	5.7
Newside Drop (Canal)	Imperial Irrigation District	1	200	0.9	4,500	14.0
New Siphon Drop (Yuma Main Canal)	U. S. Water and Power Resources Service	2,3	1 410	11.3	2,000	3.2
Nicasio Dam	Marin Municipal Water District	1	400	1.7	3,450	11.0
North Fork Dam	(See Lake Clementine and Pacheco Lake)					
Orange County (OC) 28 (Pipeline)	Orange County Water District	1	6 300	12.0	1,600	10.2
Orange County (OC) 45 (Pipeline)	City of La Habra	1	100	0.4	5,450	20.4

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Orange County (OC) 59 (Pipeline)	Orange County Water District	1	5 000	9.4	1,600	10.2
O'Shaughnessy Dam	(See Hetch Hetchy Reservoir)					
Pacheco Lake (North Fork Dam)	Pacheco Pass Water District	1	60	0.3	5,600	21.8
Pacoima Dam	Los Angeles County Flood Control District	1	400	1.0	3,450	18.6
Palo Verde Diversion Dam	U. S. Water and Power Resources Service	2,3	8 700	65.0	1,500	2.6
Parker Drop (Canal)	South San Joaquin Irrigation District	1	300	0.8	3,900	19.7
People's Weir (Canal)	People's Ditch Company	1	2 200	3.5	1,850	14.5
Perris Power Project (Pipeline)	Metropolitan Water District of Southern California	2,5	7 900	40.3	1,550	3.6
Peters Dam	(See Kent Lake)					
Pilarcitos Dam	City of San Francisco	1	200	0.8	4,500	15.8
Point Loma Wastewater Treatment Plant (Pipeline)	City of San Diego	1	1 200	8.0	2,050	4.0
Ponderosa Diversion Dam	Oroville-Wyandotte Irrigation District	1	3 300	14.0	1,700	5.0
Prosser Creek Dam	U. S. Water and Power Resources Service	2,4	1 000	3.5	2,150	8.0
Rector Creek Dam	California Department of Finance	1	100	0.5	5,450	16.4
Red Bluff Diversion Dam	U. S. Water and Power Resources Service	2,4	14 000	70.0	1,400	3.4
Redlands Water Treatment Plant (Pipeline)	City of Redlands	2	200	0.9	4,500	14.0
Reservoir A (Pipeline)	El Dorado Irrigation District	1	730	3.2	2,550	7.9
Rindge Dam	Adamson Companies	1	600	0.9	2,850	25.7
Rio Hondo (Pipeline)	Metropolitan Water District of Southern California	2,5	2 000	12.3	1,900	4.0
Robert A. Skinner Dam	Metropolitan Water District of Southern California	1	1 400	6.3	2,000	5.8
Robert W. Matthews Dam	(See Ruth Reservoir)					
Round Valley Dam	Jack and Thomas Swickward	2	90	0.4	5,450	18.4
Ruth Reservoir (Robert W. Matthews Dam)	Humboldt Bay Municipal Water District	2,4	4 000	14.2	1,650	5.6
Salt Spring Valley Reservoir (Dam)	Rock Creek Water District	1	90	0.4	5,450	18.4
Saeltzer Dam	Flat Water Ditch Company	4	875	6.5	2,350	4.1

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Sand Bar Project (Dam)	Oakdale and South San Joaquin Irrigation Districts	4	12 000	70.0	1,400	2.9
Sand Creek Check (Canal)	Orange Cove Irrigation District	1	200	1.5	4,500	8.4
San Dieguito Treatment Plant (Pipeline)	San Dieguito Water District and Santa Fe Irrigation District	2	1 000	4.5	2,150	6.2
San Dimas Dam	Los Angeles County Flood Control District	1	100	0.3	5,450	27.3
San Dimas (Pipeline)	Metropolitan Water District of Southern California	2,7	9 900	68.2	1,500	2.6
San Gabriel Dam	Los Angeles County Flood Control District	2	500	3.0	3,100	7.0
Santa Anita Dam	Los Angeles County Flood Control District	1	300	0.7	3,900	22.6
Santa Felicia Dam	(See Lake Piru)					
Santiago Creek (Pipeline)	Metropolitan Water District of Southern California	2,3	3 000	15.6	1,700	4.1
San Vicente Reservoir (Pipeline)	San Diego County Water Authority	2	850	3.4	2,375	7.7
Schaads Reservoir (Middle Fork Dam)	Calaveras Public Utility District	1	75	0.4	5,500	16.0
Scotts Flat Dam	Nevada Irrigation District	1	1 300	5.5	2,050	6.3
Scott Dam	(See Lake Pillsbury)					
Semitropic Intake Canal	Semitropic Water Storage District	1	8/	8/		
Sepulveda Canyon (Pipeline)	Metropolitan Water District of Southern California	2,7	8 600	56.2	1,500	2.8
Sidney N. Peterson Water Treatment Plant (Pipeline)	San Juan Suburban Water District	2	175	0.4	4,700	28.8
Slab Creek Dam	Sacramento Municipal Utility District	6	400	3.0	3,450	6.2
Snow Creek (Pipeline)	Desert Water Agency	1	300	1.7	3,900	9.3
South Canal	Pacific Gas and Electric Company	2	8 000	37.0	1,550	4.0
South Portal Doulton Tunnel	Montecito County Water District	1	200	0.5	4,500	25.2
Spicers Meadows Dam	Pacific Gas and Electric Company	1	750	3.3	2,550	7.8
Stevens Creek Dam	Santa Clara Valley Water District	1	75	0.3	5,500	24.1
Stone Canyon Dam	City of Los Angeles	2	300	2.0	3,900	7.9
Stony Gorge Dam	U. S. Water and Power Resources Service	4	6 000	18.0	1,600	6.4

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Table 11. Project Cost and Energy Cost in 1984 for 285 Potential Hydroelectric Facilities (Continued)

Facility	Owner	Status of Development	Capacity (kW)	Energy (GWh/yr)	1984 Project Cost ($/kW)	1984 Energy Cost (¢/kWh)
Success Dam	U. S. Army Corps of Engineers	4	4 000	12.0	1,650	6.6
Sweetwater Treatment Plant (Pipeline)	San Dieguito Water District and Santa Fe Irrigation District	2	1 400	6.3	2,000	5.8
Temescal (Pipeline)	Metropolitan Water District of Southern California	2,5	2 800	18.0	1,700	3.3
Terminal Reservoir Inlet (Pipeline)	San Luis Obispo County Flood Control and Water Conservation District	2	75	0.6	5,500	10.7
Terminus Dam	(See Lake Kaweah)					
Tinemaha Dam	City of Los Angeles	2	1 600	8.3	2,000	5.0
Tuberose Check (Canal)	Imperial Irrigation District	1	200	1.3	4,500	10.0
Tule Lake (Dam)	R. W. Akers	1	75	0.3	5,500	24.1
Upper Dawson Powerplant (Canal)	Turlock Irrigation District	5	4 000	15.9	1,650	5.0
Upper Main Canal	Browns Valley Irrigation District	1	200	0.9	4,500	14.0
Vail Dam	Rancho California Water District	1	200	0.9	4,500	14.0
Valley View (Pipeline)	Metropolitan Water District of Southern California	2,5	2 400	14.2	1,800	3.8
Van Owen Regulating (Pipeline)	City of Los Angeles	1	600	5.0	2,850	4.6
Venice (Pipeline)	Metropolitan Water District of Southern California	2,7	10 100	60.0	1,500	3.0
Vermillion Valley Dam	(See Lake Thomas A. Edison)					
Volta No. 2 Powerhouse (Canal)	Pacific Gas and Electric Company	7	1 000	5.0	2,150	6.0
Warm Springs Dam	U. S. Army Corps of Engineers	2,3	3 000	15.0	1,700	4.3
Webber Dam	El Dorado Irrigation District	1	75	0.3	5,500	24.1
West Valley Dam	South Fork Pit River Irrigation District	1	900	3.8	2,300	7.1
White Pines Dam	Calaveras County Water District	1	100	0.4	5,450	20.4
Whitewater Canyon Irrigation System (Pipeline)	Whitewater Canyon Mutual Water Company	2	400	2.5	3,450	7.5
Whitewater River (Pipeline)	Desert Water Agency	1	400	2.4	3,450	7.8
Yorba Linda Feeder (Pipeline)	Metropolitan Water District of Southern California	2,7	5,100	33.5	1,600	2.9
Youd Drop (Canal)	Merced Irrigation District	1	100	0.5	5,450	16.4
Yuma Main Canal	(See New Siphon Drop)					

See footnotes on first page

Table 12. Summary of Facilities Cost Effective in 1984, by 1989, and Those Not Likely to be Cost Effective

	Cost Effective								
	In 1984			By 1989			Not Likely		
Group	Facilities (No.)	Capacity (kW)	Energy (GWh/yr)	Facilities (No.)	Capacity (kW)	Energy (GWh/yr)	Facilities (No.)	Capacity (kW)	Energy (GWh/yr)
(1)	16	21 875	91	5	1 325	4	7	2 040	7
(2)	36	134 135	610	5	14 720	47	1	450	1
(3)	115	311 990	1 549	63	19 955	69	37	3 510	2
TOTAL	167	468 000	2 250	73	36 000	120	45	6 000	10

(1) Sites studied by the Department (28).
(2) Sites studied by others (42).
(3) Information obtained from questionnaires (215 sites).

CHAPTER IV

PROCEDURES FOR SITE DEVELOPMENT

The procedures for obtaining the permit approvals and environmental reviews required for retrofitting small hydroelectric facilities are considerably less complex than those for most other energy development projects of similar size. However, this does not mean that they are simple or that they can be completed quickly. In this chapter, the procedures are explained in the context of overall facility planning, obtaining approvals, design, and construction. As with facility design and construction, most prospective small hydroelectric developers should engage a qualified consultant to do project planning work and obtain approvals.

The steps that must be taken to develop a small hydroelectric project are listed, in sequence, in Table 13.

Because some steps can be carried out concurrently, usually only about 36 months will elapse between the reconnaissance survey and the full operation of the project. If the site owner chooses to apply for a PURPA

Table 13. Steps Required to Develop a Small Hydroelectric Project

Step	Estimated Completion Time	Reference in this Report
(1) Reconnaissance Survey	1-3 days	Chapter IV
(2) FERC Preliminary Permit Application and Processing	4-9 months	Appendix C
(3) Preliminary Feasibility Study	1-3 months	Chapter III
(4) DOE Feasibility Loan Application and Processing	1.5-3 months	Appendix C
(5) Final Feasibility Study	4 months	Chapter IV
(6) DOE License Loan Application and Processing	3 months	Appendix D
(7) Licensing, Permit Approvals, and Environmental Review	12 months	Appendix C
(8) Financing: Short-term and Long-term	4 months	Appendix D
(9) Preparation of Plans and Specifications	6 months	Appendix C
(10) Manufacture of Equipment	10-12 months	Appendix E
(11) Construction and Testing	9-12 months	-

Lake Fordyce, on Fordyce Creek in Nevada County, is owned by the Pacific Gas and Electric Company. A 900-kilowatt hydroelectric power plant at this site could generate 4 million kilowatthours of electricity annually. This amount of energy is equivalent to burning 6,800 barrels of oil in a fossil-fuel power plant. (Photo by DWR Division of Safety of Dams)

Title IV loan either to finance the final feasibility study or to apply for the FERC license or both, about 3 to 6 months must be added to the schedule. Before granting such a loan, however, the U. S. Department of Energy (DOE) requires that developers obtain either a preliminary permit or a license exemption.

The steps for developing a small hydroelectric project are discussed below. A generalized schedule for the development of a small hydroelectric facility is presented in Figure 13.

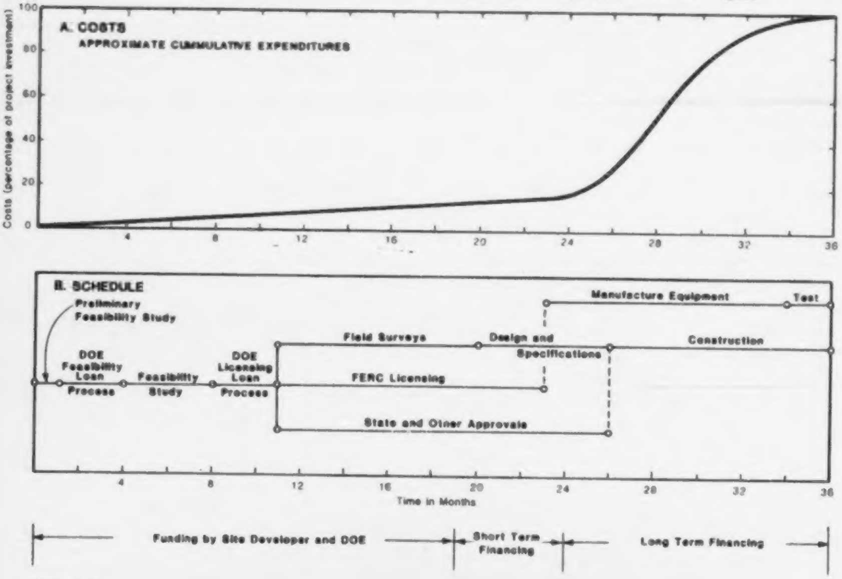
Reconnaissance Survey

The reconnaissance survey is used to determine whether a hydroelectric potential exists at a given site. Specifically, the investigator must determine how much water falls through what distance. If a field investigation and preliminary computation show that the site has little or no potential, further development can stop before the owner or developer has made any significant investment.

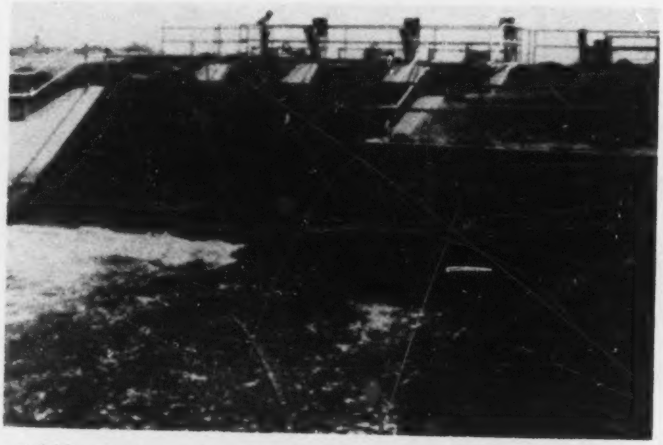
Preliminary Permit Application

If the reconnaissance results are favorable, the developer next applies to FERC for a preliminary permit or an exemption. [A sample application and the instructions for completing it are included in Appendix F.] The preliminary permit gives a permittee priority in applying for a FERC license to develop the site. A FERC license exemption provides exclusive development rights to the site owner. The preliminary permit or license exemption is a prerequisite to obtaining a DOE loan for the final feasibility study.

Figure 13 Typical Costs and Schedule for Developing a Small Hydroelectric Project



SOURCE: USCE



Dahlia Drop, on the Central Main Canal in Imperial County, is owned by the Imperial Irrigation District. A 225-kilowatt hydroelectric power plant at this site could generate 1 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 1,700 barrels of oil annually in a fossil-fuel plant. (Photo by DWR Energy Division)

Preliminary Feasibility Study

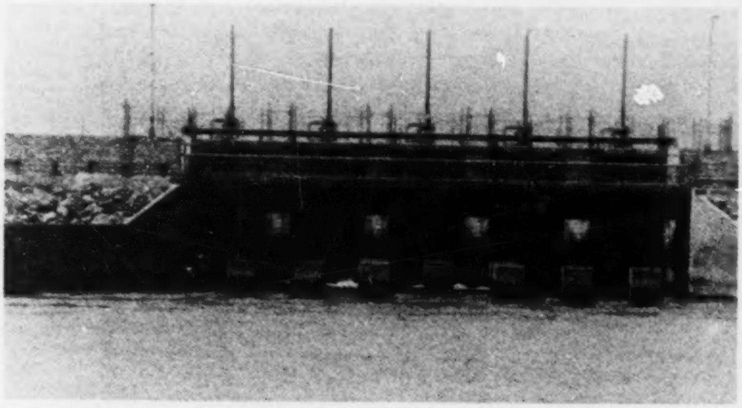
In the preliminary feasibility study, the full potential of the site is realistically assessed at a minimum cost. The results of the study will help the developer to decide whether to spend more money, apply for a Title IV loan to finance the final feasibility study, or both.

The preliminary feasibility study presents the greatest financial risk. Therefore, a developer (without in-house capability) should have a qualified engineer determine whether the site lacks potential due to technical, economical, or environmental reasons; whether it would be economically marginal during its early years of operation; or whether it shows a definite promise of being both technically and economically feasible. Examples of preliminary feasibility studies are presented in Appendix C.

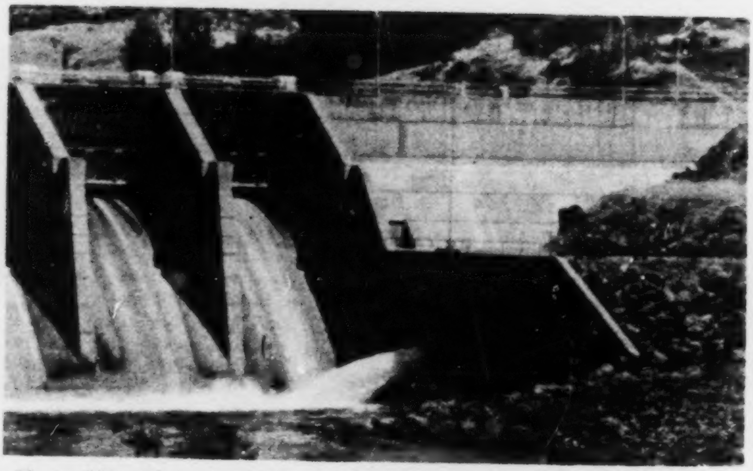
The cost of a preliminary feasibility study should be about $3,000 to $5,000, depending on the complexity of the site and the availability of reference material such as drawings of existing structures, streamflow data, etc. The study should provide enough information to support an application for a Title IV loan to finance the final feasibility study.

Feasibility Loan Application and Processing

A loan program established by DOE can provide up to 90 percent of the cost of the final feasibility study at a rate of 7.25 percent interest. A developer can obtain up to $50,000 for a ten-year term; repayment is not required during the first four years. Moreover, if the final feasibility study reveal that the proposed project is not technically or economically sound, DOE may forgive the repayment of the loan.



Thermalito Afterbay River Outlet, adjacent to the Feather River in Butte County, is owned by the California Department of Water Resources. A 13 000-kilowatt hydroelectric power plant at this site could generate 43 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 73,000 barrels of oil annually in a fossil-fuel power plant.
(Photo by DWR Energy Division)



Thermalito Diversion Dam, on the Feather River in Butte County, is owned by the California Department of Water Resources. A 3 000-kilowatt hydroelectric power plant at this site could generate 24 million kilowatthours of electricity annually. This amount of energy is equivalent to burning 41,000 barrels of oil in a fossil-fuel power plant. (Photo by DWR Energy Division)

Final Feasibility Study

If the results of the preliminary feasibility study are favorable, the next step is to refine the preliminary estimates of the project's capacity, energy output, and construction costs. In some cases, if feasibility is definitely indicated and sufficient records of streamflow are available, this refinement process can await final design. In other cases, the results of the preliminary feasibility study can be used to prepare the FERC license application. Usually, however, the estimates of capacity, streamflow, and costs will have to be refined during a final feasibility study in order to determine the optimal size of the turbine/generator.

The feasibility study must

1) determine the installed capacity, the number of generating units required (usually one unit for a small hydroelectric facility), and the size and type of supporting physical works;

2) prepare detailed estimates of construction costs;

3) develop ownership and operating criteria for the facility;

4) estimate energy generation under wet-year, normal, and dry-year streamflow conditions; and

5) identify the constraints on development of the site. Financial, legal, environmental, and socioeconomic constraints may affect a project adversely or even prevent its development.

The major factors that influence the layout of the project are the head and flow, the performance characteristics of the turbine/generator, the size of the structure needed to house the equipment, and the configuration of the facilities.

Licensing Loan Application and Processing

If the results of the final feasibility study are favorable, the next step is to apply for a DOE licensing loan. As under the DOE Feasibility Loan Program, a developer may obtain up to $50,000 for a ten-year term at 7.25 percent interest. Part of the loan may be used to defer the cost of obtaining the necessary environmental and other approvals by state, federal, and local agencies.

License and Permit Approvals, and Environmental Review

The final feasibility study will provide enough technical information for the license and permit applications. The licensing and approval processes (discussed in detail in Appendix F) are quite involved and require about a year to complete. Since similar information is required for the various state and federal applications, totally new information need not be generated for each application. It may be necessary to obtain licenses, permits, certificates, and approvals from several state, federal, and local agencies (Table 14). The authority, responsibility, and requirements of these federal, state, and local agencies are discussed in Appendix F.

Table 14. Agencies Whose Approvals for Small Hydroelectric Projects Are Required

Federal	State	Local
Federal Energy Regulatory Commission (FERC)	Department of Fish and Game	Counties
U. S. Army Corps of Engineers	Department of Water Resources	Special Districts
U. S. Bureau of Land Management	State Lands Commission	Municipalities
U. S. Forest Service	State Water Resources Control Board	
U. S. Water and Power Resources Service	Office of State Treasurer (District Securities Division)	

Financing

Short-Term Financing. As soon as the FERC license is approved and it is known that other approvals are imminent, the developer should begin to develop the final design, and prepare specifications and bid documents. By this time, the loan funds for the feasibility study and licensing will be running out, and long-term financing for construction, such as bonds and other government loans, will probably not be arranged yet.

To finance the project at this stage, a developer can use a variety of financial resources, including private financing, certain government loans, or a combination of the two (see Appendix H). For this phase of the project, a developer should consult an experienced financial adviser concerning short-term, and long-term financing.

Long-Term Financing. Long-term financing arrangements should be completed by the time the order for turbine/generator is placed. The manufacture of the hydroelectric generating equipment requires from 10 to 12 months. The manufacturer will require a down payment and subsequent progress payments while the equipment is being fabricated.

Sources of long-term loans include bonds, private financing, and government loans. Tax-exempt bonds, such as general- obligation or certain revenue bonds, can usually be issued by public agencies, and taxable revenue bonds can be issued by either public or private agencies. Private financing includes equity and mortgage loans. Income tax credits provided by the Windfall Profits Tax Act of 1979 encourage private financing. Several government agencies issue construction loans at low-interest, usually around five percent; they include the U.S. Department of Housing and Urban Development and the U.S. Department of Agriculture.

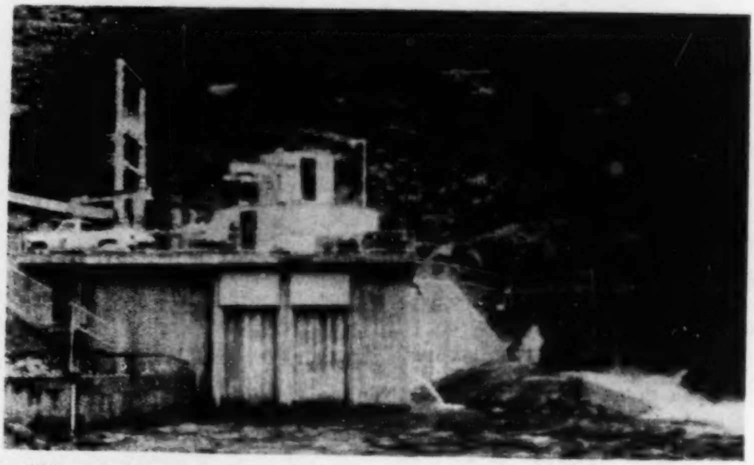
The California Legislature has established several programs to assist renewable resource technologies and to provide financing assistance for the development of small hydroelectric projects. Appendix H contains descriptions of these programs and the name and address of the agencies responsible for their administration.

Design and Construction

Preparation of Plans and Specifications. The preparation of contract plans and specifications requires about 6 months.

Manufacture of Equipment. Since it takes about one year to manufacture the turbine and generator, the contract for those items should be awarded as soon as possible. Their manufacture should proceed concurrently with design and construction of the civil works. Usually, a separate contract for the turbine/generator is awarded before the design of the civil works has been completed. Delivery of the turbine/generator should be coordinated with construction of the plant structure.

Construction and Testing. Construction usually takes about 9 to 12 months, depending on the complexity of the project. Following this, a month or two of operational testing will be required. This should be conducted by an engineer and should include the training of operation and maintenance personnel.



Rollins Dam, on the Bear River in Nevada County, is owned by the Nevada Irrigation District. Here, a 12 000-kilowatt hydroelectric power plant generates 60 million kilowatthours of electricity per year. This amount of energy is equivalent to burning 102,400 barrels of oil in a fossil-fuel power plant.
(Tudor Engineering Company Photo)

GLOSSARY

ACRE-FOOT (ac-ft, AF) -- The amount of water required to cover one acre to a depth of one foot. This is equivalent to 325,851 gallons, 43,560 cubic feet, 1,233.5 cubic metres, or 1.2335 cubic dekametres.

ADVERSE WATER CONDITIONS -- Water conditions that limit the hydroelectric generation by either a low water supply or a reduced HEAD.*

ALTERNATING CURRENT (ac, AC) -- Electricity that reverses its direction of flow periodically, as contrasted to DIRECT CURRENT.

AMORTIZATION -- The paying of a debt with installment payments or with a SINKING FUND. Also writing off expenditures by prorating them over a period.

APPRAISAL STUDY -- A preliminary feasibility study made to determine if a detailed FEASIBILITY STUDY is warranted. Also called a reconnaissance study.

AVAILABILITY FACTOR -- The percentage of time a plant is available for power production.

AVERAGE-WATER YEAR -- The average annual flow of water available for hydropower generation calculated over a long period, usually 10 to 50 years.

AVOIDED COST -- The payment made for the capacity and energy of a small power project; such payment equals the cost to a utility of obtaining and operating additional generating units, or to purchase power from another source, if this power were not available. Also called avoidable cost.

BARREL (bbl) -- The measure used for crude oil; it is equal to 42 U.S. gallons (gal).

BARREL-OF-OIL EQUIVALENT -- (BOE). A unit of energy equal to the energy contained in a BARREL of crude oil or 5,800,000 Btu.

BASE LOAD -- The amount of electric power needed to be delivered at all times and all seasons.

BASE LOAD STATION -- A power generating station usually operated at a constant output to take all or part of the BASE LOAD of a system.

BENEFIT-COST RATIO (B/C) -- The ratio of the present value of the benefit (e.g. revenues from power sales) to the present worth of the project cost.

BOE -- See BARREL-OF-OIL EQUIVALENT.

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*Capitalized terms indicate those defined elsewhere in this glossary.

BRITISH THERMAL UNIT (Btu) -- The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.

BTU -- See BRITISH THERMAL UNIT (Btu).

BLM -- Bureau of Land Management.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) -- An act, passed in 1970, that requires that the environmental impact of most projects and programs be identified. Among its important provisions is one requiring that a detailed statement of the environmental impact of, and alternatives to, a project be submitted to the California State or local government before the project can begin.

CAPACITY -- The maximum power output or the load for which a generating unit, generating station, or other electrical apparatus is rated. Common units include kilovolt-ampere (kVA), KILOWATT (kW), and MEGAWATT (MW).

CAPACITY FACTOR -- The ratio of the energy that a plant produces to the energy that would be produced if it were operated at full capacity throughout a given period, usually a year. Sometimes called the plant factor.

CAPACITY VALUE -- The part of the market value of electric power that is assigned to DEPENDABLE CAPACITY.

CAPITAL EXPENDITURES -- The construction cost of a new facilities (additions, betterments, and replacements) and expenditures for the purchase or acquisition of existing utility plant facilities. Also called capital outlay.

CAPITAL OUTLAY -- See CAPITAL EXPENDITURES.

CAPITALIZED COST -- A method used to compare the costs of alternatives; it is equal to the sum of the initial costs and the present worth of annual payments, such as operation and maintenance costs.

CAPITAL RECOVERY -- See DEBT SERVICE.

CAPITAL RECOVERY FACTOR -- A factor used to convert an investment into an equivalent annual cost at a given interest rate for a specified period.

CDWR -- California Department of Water Resources; also DWR.

CEC -- California Energy Commission. (Officially, the Energy Resources Conservation and Development Commission.)

CEQA -- CALIFORNIA ENVIRONMENTAL QUALITY ACT.

CFS -- CUBIC FEET PER SECOND.

CHECK STRUCTURE -- A structure where water flow is regulated and measured.

CIRCUIT BREAKER -- A switch that automatically opens to cut off an electric current when an abnormal condition occurs.

CIVIL WORKS -- All the works of a facility associated with plant structures, impounding channeling, and emergency release of water, etc.

COGENERATION -- The use waste heat from an industrial plant to drive turbine-generators for electricity generation. Also, the use of low-pressure exhaust steam from an electric generating plant to heat an industrial process or a space.

CPUC -- California Public Utilities Commission, also PUC.

CUBIC FEET PER SECOND (cfs, ft^3/s) -- A flow equal to 646,317 gallons per day or 0.028317 cubic metres per second (m^3/s). Also called a SECOND FEET.

CRITICAL HEAD -- The HEAD at which the output of a turbine at full gate equals the NAMEPLATE RATING of an associated GENERATOR.

DEMAND -- The rate at which electrical energy is delivered to a system, to part of a system, or to a piece of equipment; it is usually expressed in KILOWATTS, MEGAWATTS, etc.

DESIGN HEAD -- The HEAD at which the RUNNER of a turbine is designed to provide the highest efficiency.

DEBT SERVICE -- The principal and interest payments made on a debt used to finance a project. Also called capital recovery.

DEPENDABLE CAPACITY -- The minimum capacity available at any time during a study period. This value is generally determined by optimizing plant operation during the driest period when the least water is available.

DIRECT CURRENT (dc, DC) -- Electricity that flows continuously in one direction, as contrasted with ALTERNATING CURRENT.

DOE -- U. S. Department of Energy.

DRAFT TUBE -- A large tube that takes the water discharged from a TURBINE at a high velocity and reduces its velocity by enlarging the cross-section of the tube.

DUMP ENERGY -- Energy generated by water that cannot be stored or conserved and when such energy is beyond the need of the producing utility.

DWR -- California Department of Water Resources, also CDWR.

EFFICIENCY -- The ratio of the output to the input of energy or power, usually expressed as percentage.

EIR -- An Environmental Impact Report prepared to satisfy the requirements of the CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA).

EIS -- An Environmental Impact Statement prepared to satisfy the requirements of the Federal NATIONAL ENVIRONMENTAL POLICY ACT (NEPA).

ELECTRICAL ENERGY UNITS -- Common units used to measure electrical energy include KILOWATTHOURS (kWh) and GIGAWATTHOUR (GWh, million kWh). A 100-watt light bulb lit for ten hours will consume one KILOWATTHOUR (kWh) of electrical energy. A one-MEGAWATT generating unit will produce 1000 kWh if it runs for one hour at full CAPACITY.

END USER -- Any ultimate consumer of electricity or of any type of fossil fuel (petroleum, coal, natural gas).

ENERGY -- The capability of doing work which occurs in several forms such as potential, KINETIC, thermal, and nuclear energy. One form of energy may be changed to another; the kinetic energy of falling water can be used to drive a turbine where the energy is converted into mechanical energy which can drive a generator to produce ELECTRICAL ENERGY.

ENERGY DISSIPATER -- A device used to reduce water pressure to a level safe for certain uses.

EXTRA HIGH VOLTAGE (EHV) -- A term applied to voltage levels of transmission lines which are higher than the voltage levels commonly used. At present, electric utilities consider EHV to be any voltage of 345,000 volts or higher. See ULTRAHIGH VOLTAGES.

FEASIBILITY STUDY -- An investigation to develop a project and definitively assess its desirability for implementation.

FEDERAL ENERGY REGULATORY COMMISSION (FERC) -- An agency in the U. S. Department of Energy, which licenses non-Federal hydropower projects and regulates the interstate transfer of electrical energy.

FERC -- FEDERAL ENERGY REGULATORY COMMISSION.

FIRM CAPACITY -- The load-carrying ability of a plant that would probably be available to supply energy for meeting LOAD at any time.

FIXED COSTS -- Costs associated with plant investment, including DEBT SERVICE, interim replacement, and insurance.

FLOW-DURATION CURVE -- A curve of flow values plotted in descending order of magnitude against time intervals, usually in percentages of a specified period. For example, the curve might show that over a period of a year, a river flows 500 CFS or more 10 percent of the time, and 100 CFS or more 80 percent of the time.

GENERATOR -- A machine that converts mechanical energy into ELECTRTICAL ENERGY.

GIGAWATTHOUR (GWh) -- One million KILOWATTHOURS (kWh).

GROUND WATER -- The supply of water under the earth's surface, as contrasted to SURFACE WATER.

HEAD -- The difference in elevation between two water surfaces. In hydropower, the net head refers to the difference in elevation between the headwater surface above and the tailwater surface below a HYDROPOWER PLANT, minus friction losses.

HORSEPOWER (hp) -- The equivalent of 0.746 KILOWATT (kW).

HYDROPOWER PLANT -- An electric power plant in which the energy of falling water is converted into electricity by turning a turbine-generator unit. Also called a hydroelectric power plant, a hydroelectric plant, or simply a hydro plant.

IMPOUNDMENT -- A reservoir or artificial pond created behind a dam.

INCREMENTAL COST -- The additional cost incurred when generating an added amount of power.

INSTALLED CAPACITY -- The total of the CAPACITIES shown on the nameplates of the generating units in a HYDROPOWER PLANT.

INTERRUPTIBLE ENERGY -- Energy that can be curtailed at the supplier's discretion.

KILO (k) -- A prefix meaning one thousand.

KILOWATT (kW) -- One thousand watts (W) or 1.34 HORSEPOWER (hp).

KILOWATTHOUR (kWh) -- One thousand watthours (Wh) - the amount of ELECTRICAL ENERGY produced or consumed by a one-KILOWATT unit for one hour.

KINETIC ENERGY -- The energy of motion; the ability of an object to do work because of its motion.

LOAD -- The amount of power required at a given point or points in an electric system.

LOAD FACTOR -- The ratio of the average load to the maximum load during a given period.

LOW-HEAD HYDROPOWER -- Hydropower that operates with a head of 20 metres (66 feet) or less.

MARKET VALUE -- The value of power at the load center, as measured by the cost of procuring equivalent alternative power to the market.

MEGA (M) -- A prefix meaning one million.

MEGAWATT (MW) -- One thousand KILOWATTS (kW) or one million watts (W).

MILL -- One tenth of a cent or one thousandth of a dollar.

MGD -- Million gallons per day, equivalent to 1.547 CUBIC FEET PER SECOND (cfs).

MWD — The Metropolitan Water District of Southern California.

NAMEPLATE RATING -- The full-load continuous rating of a GENERATOR or other electrical equipment under specified conditions as designated by the manufacturer, and written on the nameplate.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) — An act, passed in 1969, requiring that the environmental impact of most projects and programs be identified. Among its important provisions is one requiring a detailed statement of environmental impact of, and alternatives to, a project to be submitted to the federal government before the project can begin.

NON-FOSSIL ENERGY -- Energy from sources other than fossil; non-fossil energy sources include nuclear, wind, tide, biomass, geothermal, water, and solar sources.

NEGATIVE DECLARATION — The document which satisfies the CEQA requirement if no significant environmenal impacts would result from a project as determined by an initial study.

OFF-PEAK — The time of day and week when the demand for electricity is low; see ON-PEAK.

ON-PEAK — The time of day and week when demand for electricity in a region is high.

OUTAGE -- The period in which a facility is out of service.

OUTAGE, FORCED -- The shutdown of a facility for emergency reasons.

OUTAGE, SCHEDULED — The shutdown of a facility for inspection or maintenance, as scheduled.

OUTPUT -- The amount of power or energy delivered from a piece of equipment, a station, or a system.

PEAKING UNIT -- An auxiliary electric power system that is used to supplement the power supply system during periods of peak demand for electricity. Peaking units are usually old, low cost, inefficient units having a high fuel cost, or hydroelectric units having low FIRM CAPACITY.

PENSTOCK — A pressure pipe used to carry water to a TURBINE.

PGandE — Pacific Gas and Electric Company.

PLANT FACTOR -- See CAPACITY FACTOR.

PRELIMINARY PERMIT -- An initial permit issued by the FEDERAL ENERGY REGULATORY COMMISSION (FERC) for hydropower projects. The permit does not authorize construction, but during the permit's term of up to 36 months, the permittee is given the right of priority-of-application for a license while completing the necessary studies to determine the engineering and economic feasibility of the proposed project, the market for the power, and all other information necessary for inclusion in an application for license.

PSI -- A unit of pressure as measured in pounds per square inch.

PUC -- See CPUC.

PUMPED-STORAGE PLANT -- A HYDROPOWER PLANT which generates electricity during periods of high demand by using water previously pumped into a storage reservoir during periods of low demand. Pumped storage returns only about two-thirds of the electricity put into it, but it can be more economical than obtaining and operating additional generating PEAKING UNITS.

PURPA -- Public Utility Regulatory Policies Act of 1978. This act requires utilities to purchase power from and interconnect with a privately developed facility and mandates the state utility regulatory agency to set a "just and reasonable price."

QUADRILLION -- Equivalent to 1×10^{15}.

QUADRILLION BTU (Quad) -- An amount of energy equal to the heat value of 965 billion cubic feet of gas, 175 million barrels of oil (BOE), or 38 million tons of coal.

RECONNAISSANCE STUDY -- See APPRAISAL STUDY.

REHABILITATION -- The restoration of an abandoned power plant to produce energy.

RETROFITTING -- Furnishing a plant with new parts or equipment not purchased or available at the time of manufacture or construction. In hydropower development, the term may refer to the installation of electric generating components at existing water facilities to produce electricity.

RIPARIAN RIGHTS -- The rights of a land owner to the water on or bordering his property, including the right to prevent diversion or misuse of upstream water.

ROYALTY -- The portion of the proceeds paid to the title holder in exchange for exploitation of a property.

RPM -- Revolution per minute.

RUNOFF -- The portion of rainfall, melted snow or irrigation water that flows over the surface and ultimately reaches streams.

RUNNER -- The part of a TURBINE, consisting of blades on a wheel or hub, which is turned by the pressure of high-velocity water.

RUN-OF-THE-RIVER PLANT -- A hydropower plant that uses the flow of a stream as it occurs with little or no reservoir capacity for storing water. Sometimes called a "STREAM FLOW" plant.

SBA -- Small Business Administration.

SCE -- Southern California Edison Company.

SDG&E -- San Diego Gas & Electric Company.

SECOND-FEET -- CUBIC FEET PER SECOND (cfs).

SEEPAGE -- Water that flows through the soil.

SERVICE AREA -- An area to which a utility system supplies electric service.

SINKING FUND -- A fund set up to accumulate a certain amount in the future by collecting a uniform series of payments.

SPILLWAY -- A passage used for running surplus water over or around a dam.

SPINNING RESERVE -- Generating capacity that is on the line in excess of the load on the system ready to carry additional electrical LOAD.

STANDBY SERVICE -- Service that is not normally used, but is available, in lieu of or as a supplement to, the usual source of supply.

STREAM FLOW -- The amount of water passing a given point in a stream or river in a given period, usually expressed in CUBIC FEET PER SECOND (cfs), or MILLION GALLONS PER DAY (mgd, MGD).

SUBSTATION -- An assemblage of equipment used to switch and/or change or regulate the voltage of electricity.

SURFACE WATER -- Water on the earth's surface that is exposed to the atmosphere such as rivers, lakes, oceans, as contrasted to GROUND WATER.

SURPLUS ENERGY -- Generated energy that is beyond the immediate needs of the producing system. This energy is usually sold on an interruptible basis.

SWITCHING STATION -- An assemblage of equipment used for the sole purpose of tying together two or more electric circuits through selectively arranged switched that permit a circuit to be disconnected in case of trouble or to change electric connections between circuits. A type of SUBSTATION.

TAILRACE -- The channel, downstream of the DRAFT TUBE, that carries the water discharged from the TURBINE.

THERM -- The equivalent of 100,000 BRITISH THERMAL UNITS (Btu).

THERMAL PLANT -- An electric generating plant which uses heat to produce electricity. Such plants may burn coal, gas, oil, biomass, or use nuclear energy to produce thermal energy.

TRANSFORMER -- A device used to change the voltage of ALTERNATING-CURRENT (AC) electricity.

TRANSMISSION -- The act or process of transporting ELECTRICAL ENERGY in bulk from a source or sources of supply to other principal parts of a system or to other utility systems.

TURBINE -- A machine in which the pressure or KINETIC ENERGY of flowing water is converted to mechanical energy which in turn can be converted to ELECTRICAL ENERGY by a GENERATOR.

ULTRAHIGH VOLTAGES (UHV) -- Voltages greater than 765,000 volts. See EXTRA HIGH VOLTAGE (EHV).

ULTRALOW HEAD -- HEAD of up to 3 metres (9.8 feet).

USCE -- U. S. Army Corps of Engineers.

USGS -- U. S. Geological Survey.

WATERSHED -- The region draining into a stream.

WATER TABLE -- The upper limit or surface of the GROUNDWATER.

WATER TREATMENT -- The purification of water to ensure its potability or safety for disposal, or to permit alternative use or reuse.

WEIR -- A dam in a stream to raise, divert the water, or to regulate the flow.

WHEELING -- The transportation of electricity by an electric utility over its lines for another utility.

WICKET GATES -- Gates at the entrance of a turbine used to control water flow into a TURBINE.

WORKING CAPITAL -- The amount of cash or other liquid assets that a company must have on hand to meet the current costs of operations until it is reimbursed by its customers. Sometimes the term is used to mean the difference between current and accrued assets and current and accrued liabilities.

WPRS -- U. S. Water and Power Resources Service (formerly U. S. Bureau of Reclamation).

YIELD -- the amount of water which can be supplied from a reservoir or a water source in a specified period.

CONVERSION FACTORS

Quantity	To Convert from Metric Unit	To Customary Unit	Multiply Metric Unit By	To Convert to Metric Unit Multiply Customary Unit By
Length	millimetres (mm)	inches (in)	0.03937	25.4
	centimetres (cm) for snow depth	inches (in)	0.3937	2.54
	metres (m)	feet (ft)	3.2808	0.3048
	kilometres (km)	miles (mi)	0.62139	1.6093
Area	square millimetres (mm²)	square inches (in²)	0.00155	645.16
	square metres (m²)	square feet (ft²)	10.764	0.092903
	hectares (ha)	acres (ac)	2.4710	0.40469
	square kilometres (km²)	square miles (mi²)	0.3861	2.590
Volume	litres (L)	gallons (gal)	0.26417	3.7854
	megalitres	million gallons (10⁶ gal)	0.26417	3.7854
	cubic metres (m³)	cubic feet (ft³)	35.315	0.028317
	cubic metres (m³)	cubic yards (yd³)	1.308	0.76455
	cubic dekametres (dam³)	acre-feet (ac-ft)	0.8107	1.2335
Flow	cubic metres per second (m³/s)	cubic feet per second (ft³/s)	35.315	0.028317
	litres per minute (L/min)	gallons per minute (gal/min)	0.26417	3.7854
	litres per day (L/day)	gallons per day (gal/day)	0.26417	3.7854
	megalitres per day (ML/day)	million gallons per day (mgd)	0.26417	3.7854
	cubic dekametres per day (dam³/day)	acre-feet per day (ac-ft/day)	0.8107	1.2335
Mass	kilograms (kg)	pounds (lb)	2.2046	0.45359
	megagrams (Mg)	tons (short, 2,000 lb)	1.1023	0.90718
Velocity	metres per second (m/s)	feet per second (ft/s)	3.2808	0.3048
Power	kilowatts (kW)	horsepower (hp)	1.3405	0.746
Pressure	kilopascals (kPa)	pounds per square inch (psi)	0.14505	6.8948
	kilopascals (kPa)	feet head of water	0.33456	2.989
Specific Capacity	litres per minute per metre drawdown	gallons per minute per foot drawdown	0.08052	12.419
Concentration	milligrams per litre (mg/L)	parts per million (ppm)	1.0	1.0
Electrical Conductivity	microsiemens per centimetre (uS/cm)	micromhos per centimetre	1.0	1.0
Temperature	degrees Celsius (°C)	degrees Fahrenheit (°F)	(1.8 × °C)+32	(°F−32)/1.8